COLORADO
Department of Higher Education

MEMORANDUM

TO: Representative Jeff Bridges, Chair, Joint Technology Committee

FROM: Ashlee Pate, CDHE Lead Finance Analyst

DATE: November 1, 2021

SUBJECT: FY 2022-23 CCHE Capital Information Technology Request Submission

This memorandum accompanies documents for the Colorado Commission on Higher Education's (CCHE) FY 2022-23 capital budget request. State law, C.R.S. 23-1-106(7)(a), delegates to the CCHE the responsibility of recommending a prioritized capital project list for the system of public higher education. This submission contains a prioritized list of all capital information technology project requests, the required financial and narrative forms, and the compiled list of current and five-year state funded capital information technology improvement plans submitted by institutions of higher education.

On May 25, 2021, state institutions of higher education submitted to the Colorado Department of Higher Education (CDHE) a total of 11 capital information technology (IT) project requests, 6 of which were existing and 5 new projects. The CCHE's Finance, Performance & Accountability (FPA) Standing Committee and CDHE staff reviewed and scored the 5 new projects for a total request of $44.5 million in new state funds and $2.3 million in institutional cash contributions.

To prioritize the projects, CDHE staff worked with the FPA Committee to apply a uniform set of criteria to evaluate the projects. The FPA Committee held two public meetings to review submitted capital IT projects. An initial prioritized list was shared and discussed on July 16, 2021. After this meeting, institutions were invited to propose scoring changes and provide supplemental documentation to support their requests. On August 19, 2021, the FPA met again to take action on the revised prioritized list, and it voted approve a revised prioritized list and forward it on to the full Commission. The full CCHE approved the prioritized list on September 2, 2021.

Capital information technology projects were reviewed and scored separately from capital continuation and renewal requests. A separate prioritized list and supplemental documentation for capital construction and renewal project submissions will be sent to the Capital Development Committee and Joint Budget Committee.

If you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

Ashlee Pate
Lead Finance Analyst
Colorado Department of Higher Education
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ATTACHMENTS:

- FY 2022-23 CCHE Capital IT Prioritized List - Final
- FY 2022-23 Prioritized Higher Education Capital IT Budget Request
- CCHE Capital IT Scoring Criteria

COLORADO

Department of Higher Education

FY 2022-2023 Capital IT Request

– Prioritized State Funded Budget Request –

1600 Broadway, Suite 2200 • Denver, Colorado 80202 • (303) 862-3001

CAPITAL IT PRIORITY RANKING FY2022-23

Ranking	Institution Name	Project Name	Score	CCF	CF
1	Colorado State University Fort Collins	Network Hardware Upgrade for CSU	N/A	$ 646,119	$ 491,001
2	Adams State University, Fort Lewis College, Western Colorado University	Digital Transformation Initiative for Rural Higher Education: A Collaboration of Adams State University, Fort Lewis College, and Western Colorado University	N/A	$ 15,563,988	$ 157,212
3	Metropolitan State University	Reimagining the Campus Digital Experience	N/A	$ 3,350,000	$ 335,000
4	Metropolitan State University	Network Infrastructure Modernization	N/A	$ 795,000	$ 250,000
5	Community College of Denver	Classroom and Conference Room Technology	N/A	$ 1,532,140	$ 97,796
6	Colorado School of Mines	Re-envisioning Mines ERP and SIS	N/A	$ 2,304,000	$ 239,000
New Projects					
7	Colorado Mesa University	ERP Modernization	96.23%	$ 4,133,602	$ 464,398
8	University of Northern Colorado	ERP Modernization and Cloud Migration	88.68%	$ 4,325,584	$ 184,931
9	Colorado Northwestern Community College, Lamar Community College, Morgan State Community College, Northeastern Junior College, Otero College, Trinidad State College	Rural College Consortium	84.44%	$ 8,627,000	$ -
10	Community College of Aurora	Improving Student Access to Technology	69.81%	$ 476,923	$ 52,992
11	Colorado State University Pueblo	Communications System Upgrade	54.72%	$ 2,754,622	$ -
			GRAND TOTAL	**$ 44,508,978**	**$ 2,272,330**

Network Hardware Upgrade for CSU

- Colorado State University – Fort Collins

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 11/2/2021

FY22-23 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**Cash and CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Colorado State University	(2) **Name & Title of Preparer:**	Shelly Carroll
(C)	(1) **Project Title:**	CSU Network Hardware Upgrade	(2) **E-mail of Preparer:**	Shelly.carroll@colostate.edu
(D)	(1) **Project Phase (__ of __):**	Phase 2 of 3	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	Date
(F)	(1) **Year First Requested:**	FY 20-21	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**		(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
	Equipment							
(28)	Servers	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ 4,576,180	$ 760,000	**$ 1,137,120**	$ 2,877,352	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ 4,774,472	$ 760,000	**$ 1,137,120**	$ 2,877,352	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	**$ 4,774,472**	**$ 760,000**	**$ 1,137,120**	**$ 2,877,352**	**$ -**	**$ -**	**$ -**
	Project Contingency							
(36)	5% for New	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	**$ 4,774,472**	**$ 760,000**	**$ 1,137,120**	**$ 2,877,352**	**$ -**	**$ -**	**$ -**
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	TOTAL	**4,774,472**	**760,000**	**1,137,120**	**2,877,352**	**-**	**-**	**-**

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2022-23 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$646,119**	
Cash Fund Amount (CF):	$491,001	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Colorado State University	
Project Title:	Network Hardware Upgrade for CSU	
Project Phase (Phase _of_):	2 of 3	
State Controller Project Number (if continuation):		
Project Type:	X	Technology Hardware
		Technology Software
Year First Requested:	FY 2021 - 2022	
Priority Number (Leave blank for continuation projects):		
Name & Title of Preparer:	Shelly Carroll, Capital Construction program manager	
E-mail of Preparer:	Shelly.Carroll@colostate.edu	
Institution Signature Approval:		Date
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

This request encompasses continuing to upgrade out-of-date networking hardware over three years to allow us sufficient time to ramp up to a steady-state funding model. Critical needs supported by this upgrade are:

1. Increase 10X in capacity comprehensively in the network, including at the border, in the core, firewalls, and switches at the edge, needed to support next generation Wi-Fi, big data, high-performance computing, and other extant applications requiring these speeds.
2. IT Security enhancements required to address vulnerabilities in existing systems. Over the past two years, we have observed a startling increase in the number and severity of threats directed at the University. A careful analysis has indicated that we need significant enhancements in our border routers and firewalls to provide adequate threat protection in today's malicious threat environment.
3. Support for life and safety devices that require modern switches capable of supplying Power over Ethernet to Internet of Things systems such as surveillance cameras in critical areas, sensors, monitors, and alarms.
4. This request represents the second year of the three-year plan articulated above and described in full below. The students of CSU have implemented an increase to their University Technology Fee specifically to co-sponsor and support the objectives of this project, and CSU is developing a new chargeback mechanism that will serve as steady-state funding for the items listed in this request at the conclusion of the third year of the project – fulfilling our commitment to refrain from future requests of this nature to the JTC. CSU is deeply appreciative of the support provided by the JTC to-date, and we appreciate JTC consideration of continued support for this essential initiative in its second year.
5. Note that due to inflation and increased costs stemming from constrictions in the global supply chain, the figures reflected in years two (current year) and three of this initiative have been increased by 3%.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$0	$541,000	**$646,119**	$2,157,143	$0	$0	$0
Cash Funds (CF)	$0	$219,000	**$491,001**	$719,608	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$0**	**$760,000**	**$1,137,120**	**$2,877,352**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

Core infrastructure (border routers, core switches, and firewalls):

- **Upgrade to 10X current capacity** – Our existing core infrastructure is 10 gig (ten gigabits per second, or ten billion bits per second). We have over four hundred buildings on our main, south, and foothills campuses, and dozens of these buildings are connected at 10 gig; thus, the core infrastructure manifests a severe point of congestion, needing a 10X upgrade in speed/capacity to 100 gig.
- **Current IT security capability** – We need to upgrade the core infrastructure to smart, adaptive, real-time IT security configuration changes that will derive from the global internet's IT security infrastructure. Our current IT security configurations in our current core devices are static – we can change the IT security configurations only manually, and thus cannot react fast enough to catch the dramatically increasing number of threats in the global internet environment. This new capability is needed to react automatically in real time to IT Security threats and vulnerabilities that will provide much greater needed protection for our network and our users.

Edge switch upgrades:

1. **Capacity upgrade** – Upgrade is needed to 10X the current capacity – many existing edge switches provide 100 meg (megabits per second or one million bits per second) to users, whereas our current standard for edge switches is 1 gig to the user. Simply put, users need a 1 gig interface to exchange existing and increasing number and size of files required for education and research. We have observed that files used for research of size one terabyte (10^{12} bytes) take more than a week to transmit. Files much larger than this cannot be transmitted at all, and numerous smaller files transmitted through a slow 100 meg interface impede the quality and quantity of research and education that must be conducted in today's environment. We have fallen behind in the upgrade of our network, and this funding request will allow us to catch up, achieve steady-state upgrades, and meet today's and tomorrow's increasing needs.
2. **Power over Ethernet (PoE) upgrades** – The existing switches are not capable of providing PoE that is required for connection of life and safety devices. The most critical need here is a backlog of more than one hundred video surveillance systems that have been approved by the Public Safety Team, and need new switches that provide PoE interfaces. Other life and safety devices needing PoE are also in the queue waiting for switch upgrades.
3. **IT Security upgrades** – Existing switches that are beyond end of life no longer receive patches and upgrades required to keep up with current IT security needs, presenting IT security vulnerabilities to users connected to them.
4. **Two-factor authentication (2FA)** – Existing switches that need upgrading do not accommodate two-factor authentication. It is critical for us to implement and sustain 2FA in the edge switches in front of our critical systems, including our Human Resources Management System, our Financial Management System, our Student Information System, our Research Management Systems, and other

systems as may emerge over time needing this capability. We have already implemented the *Duo* 2FA system for our off-campus access. We need to implement 2FA in front of all of our critical systems, as observations from other higher education institutions that have implemented 2FA comprehensively indicate that this has provided almost perfect protection of their systems against phishing, malware, and ransomware – this is our greatest IT security risk today.

5. **Central management, administration, and IT security configurations of edge switches** – Older switches are not capable of being fully integrated into our central, automated edge switch management, control, administration and IT security configuration environment. This central control system provides the capability to upgrade all edge switches to the latest software and firmware configurations, maintaining the latest IT security protections, including Network Access Control and Software Defined Networking. The central systems also allow monitoring of edge switches and traffic patterns that may indicate an IT security issue on user devices (computers, printers, FAX machines, etc.). We must upgrade old switches to fit into this environment.

The need to upgrade edge switches and the central core infrastructure is great. The core infrastructure is quite expensive and State funding will allow us to progress to steady-state funding of our network upgrades in year four. A recent inventory found 260 switches beyond end of life and in need of immediate upgrade. The 3-year plan contains upgrades for these edge switches in the first two years, with core infrastructure upgrades in years two and three. In the third year of the project, the steady-state number of edge switches will be achieved, as indicated in Table 2 below on page 6 containing the steady-state replacement cycles.

3-YEAR PROJECT PLAN

1. **Edge switche**s – are planned to be replaced as follows:
    a. Year 1: 200 – in progress
    b. Year 2: 60
    c. Year 3: 157 (steady-state annual replacement number)
2. **Core devices** – will be replaced as follows:
    a. Year 2: Replace two core switches
    b. Year 3: Replace two border routers and two firewalls

The three-year plan is proposed to: 1) allow us time to put funding in place to achieve steady-state self-sufficiency, 2) deal with the most critical problems first (the most critical problem is to deal with upgrading edge switches that are woefully out of date and present great IT Security risks), and 3) continue to deal with extremely urgent needs in years two and three. We will procure all devices under state/university purchasing and fiscal rules, and perform all configurations, installations, and testing using in-house staff. We estimate the value of this internal labor to exceed $250,000 over the three-year term of the project. We have already procured a commitment of an additional discount of 3% for edge switches over and above our substantial education discount, due to the volume of purchases, and this is reflected in the budget request. Devices upgraded/replaced will be sent to surplus property in accordance with State fiscal rules.

D. PROGRAM INFORMATION:

The project involves multiple institutions as CSU Fort Collins evolves to encompass operations for the full CSU System in the following ways:

- CSU-Fort Collins operates Kuali Financial System for three locations: CSU-Fort Collins, CSU-Pueblo, and the CSU System Office.
- CSU-Fort Collins is well into the process of implementing the Banner Student Information System for two locations: CSU-Fort Collins, and CSU-Pueblo. CSU-Fort Collins is already live, and "go live" for CSU-Pueblo is August 2021. CSU-Global has begun to evaluate whether this system is appropriate for them after CSU-Pueblo goes live on Banner.

- CSU-Fort Collins and CSU-Pueblo are in the process of consolidating Identity and Access Management at the CSU- Fort Collins campus using Internet2's TIER environment.
- CSU-Fort Collins and CSU-Pueblo are exploring implementing a new HR system at the CSU System level after the Banner project is complete.

The upgrade of the core devices proposed in the project is necessary to accommodate sufficient capacity and IT Security for access from CSU-Pueblo into these systems.

E. CONSEQUENCES IF NOT FUNDED:

Critical needs that we are unable to keep up with are:

1) The need to upgrade our aging border routers.
2) The need to upgrade our aging "core" switches.
3) The need to upgrade our enterprise (campus-level) firewalls to provide adequate network and IT security for the campus.
4) The need to upgrade our aged edge switches.
5) Unable to support adequate integration of CSU-Pueblo campus.
6) Unable to increase general capacity of network connectivity.
7) Unable to support POE for some life/safety devices.

These needs are near-term, and we simply do not know where the funding needed in the near term would come from if this proposal is not funded by the State.

F. ASSUMPTIONS FOR CALCULATIONS:

Cost estimates for equipment was provided by our approved vendors.

G. OPERATING BUDGET IMPACT:

N/A for Higher Education.

H. PROJECT SCHEDULE:

The project schedules is given in the table below.

Table 1 Project Schedule.

All 3 phases	Start Date	Completion Date
Planning	June 2021	August 2021
Implementation	August 2021	June 2024
Testing	August 2021	June 2024
Closing	August 2023	June 2024

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	X❑ Yes	❑ No
Request 6-month encumbrance waiver:	❑ Yes	❑ X No
Is this a continuation of a project appropriated in a prior year:	❑ Yes	❑X No
State Controller Project Number (if continuation):		

CONTINUATION HISTORY: (DELETE IF NOT APPLICABLE)

	FY 2021-22 Appropriated	FY 2XXX-XX Appropriated	FY 2XXX-XX Appropriated	**Total Appropriations**
Total Funds	$760,000			**$760,000**
General Fund	$541,000			**$541,000**

Cash Funds*	$219,000			**$219,000**
Reappropriated				
Federal Funds				

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

There are several critical needs requiring a minimum standard of network connectivity in higher education environments:

- **General Capacity** – The amount of information available worldwide, accessible by the Internet, keeps growing exponentially at a rate exceeding 25% increase per year. Simply put, regular switch replacements/upgrades are required to keep up with ever growing needs for capacity. Most of our current unmet needs are to replace older switches (older than seven years) that operate at 100 Mbps (million bits per second) to the wall jack (user). CSU has adopted a national trend of standardizing on gigabit per second connectivity at the user level, or 1,000 Mbps (1 Gbps) to every wall jack. In many campus buildings, connectivity is sub-standard.
- **Support for Life and Safety** – Older switches are not capable of supplying Power Over Ethernet (POE) that is required for some life and safety devices, including video cameras, life and safety monitors (fire, smoke, environmental conditions, etc.), and sensors. This POE technology is available in all modern switches, where both a network signal and electrical power are supplied over the same networking wire. At the end of FY 19, we had 1,634 video cameras deployed, with over 150 additional systems targeted for deployment, and such deployment has stalled due to covid. Having so many older switches that do not have POE capability limits our ability to deploy such devices in areas of critical need, and it will not be possible to meet identified life and safety needs without edge switch upgrades/replacement.
- **Emerging Applications** – Emerging applications, including high-performance computing, ultrahigh-def video (8K), 3D videos, artificial reality, and virtual reality, have an insatiable requirement for new, much higher capacities. All such applications also require low latency and jitter, in addition to much higher raw capacity – all motivating this request. Students already are showing a need for these types of applications to meet their educational needs, especially now that instruction for Spring and Summer terms 2021 have gone online, motivating increased use of advanced applications. Also, our Learning Management System and numerous associated plug-ins requested by faculty to support education is entirely online in the cloud.
- **Big Data** – Both educators and researchers are increasingly engaged in working with Big Data, files of Terabyte size or larger. Files of this size are now common and ubiquitous across the Institution. Most of our current unmet needs are to replace older switches (older than seven years) that operate at 100 Mbps to the wall jack (user). As an example, moving one 10 TB file on a 100 Mbps network will require over 9 days to complete the file transfer! Researchers often have needs to transport a number of these sizes of files across the network simultaneously.
- **Wi-Fi** – The need for, and indeed the expectation of excellent Wi-Fi connectivity exists today. The newest Wi-Fi access points require 10 Gbps uplink capability, as upload speeds from individual mobile devices can approach 1 gigabit per second each, and many such devices can be connected through a single Wi-Fi access point. Our ability to attract and retain students, researchers, faculty and staff is dependent upon infrastructure required for them to get their work done, and Wi-Fi networking is a critical component.
- **Basic Functionality** – Newer switches have enhanced features and functionality essential for a modern network architecture, involving layer-3 routing, newer network protocols, and more ports for services. We can provide additional technical details upon request, but here we simply assert that network switch technology continues to evolve and improve, and falling too far behind will severely limit our ability to deliver needed connectivity to our constituents.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

IT Security – Newer switches have enhanced IT security features that interact seamlessly and automatically with routers, firewalls, intrusion detection systems, etc. Modern firewalls that operate at 100 Gbps are required to interface with the core devices running at this speed, and to include contemporary rules and algorithms for filtering an increasing malicious quality and quantity of malware. This is a dire need as we continue to elevate and enhance our IT security posture. Older switches run past end of life (as defined by the manufacturer) are no longer supplied with IT security patches. We are currently operating in a locus of high IT security risk, as 260 of our edge switches need to be upgraded to maintain an acceptable IT security posture.

L. BUSINESS PROCESS ANALYSIS:

Despite extraordinary efforts to fund network upgrades ourselves, including two grants from the National Science Foundation, inclusion of networking hardware in all capital projects, use of departmental funds, and exhausting the telecom reserve, we find ourselves behind in upgrading edge switches, and in the need to upgrade our core networking hardware. State funding for three years is intended to allow the University to alleviate the backlog and put new funding streams in place that will allow for all devices to be upgraded on a seven-year cycle. A survey of peer institutions indicated upgrade cycles for edge switches ranging from five to seven years. We have adopted seven years as the standard for upgrades for edge switches to balance cost versus functionality, leaning toward minimizing cost. Table 2 below includes unit costs, total costs, and annualized costs for steady-state upgrades.

Table 2 Steady-State Networking Device Replacement Costs*

Item	No.	Unit Cost ($)	Total Cost (k$)	Replacement Cycle (Years)	Annual Costs (k$/yr.)
Edge Switches**	1,100	$4,604	$5,064.4	7	$723.5
Border Routers	2	$382,500	$765	7	$109.3
Core switches	2	$333,030	$666	7	$95.2
Firewalls	2	$612,000	$1,224	7	$171.9
Totals					$1,099.9

* Costs in Table 2 are 2020 costs.
** 3% special, additional discount for this project applied to cost.

CSU expects to achieve self-sufficiency in network upgrade funding in year 4. Cash funds through year 4 are comprised about equally of student technology fee funding, Provost funding, and departmental funding. The remaining funding required for core devices will be established during the second year of this project, and we hereby so commit to that. We have two types of student technology fees: 1) Technology fees that are college specific, ranging from $40 per semester for intra-university, open-option students, to $170 per semester for engineering students (most are about $100 per semester), and 2) the central University Technology Fee that is $25 per semester per student. Technology revenue stays within each college in which it is collected, and the University Technology Fee is used for central technology. After two years of discussions and advocacy from the Vice President for IT, the University Technology Fee Advisory Board, consisting entirely of students, has increased the University Technology Fee to $32 per semester per student (an increase of $7 per semester per student beginning in FY21) to fund their portion of the steady-state funding for network technology upgrades. Also, we have commitments from the Provost and the decentralized units (the departments) to progressively increase funding over the three years of the project to

achieve steady-state funding for networking upgrades. The funding from the Provost will derive from the general Education and General budget of the University, and the funding from the departments will derive from their base budget allocations.

This project will allow us to attain currency in our networking technology, and give us the time necessary to put into place internal cash funding for all networking technology over time; thus, no additional capital IT funds will be requested henceforth from the JTC for networking hardware.

Information on Achieves Goals scoring criteria, in relation to the Higher Education Master Plan

1. **Increases credentialing** – Most of our credentialing and competency-based education is offered through CSU Online, which currently serves about 4,000 students. All of these programs are offered online, through our Canvas Learning Management System (LMS), used by each and every one of those online students. The current proposal provides much-needed, enhanced and secure access in three ways: 1) adding required capacity behind an appropriate firewall to our core network necessary to maintain high-quality access from off campus to the Canvas LMS, 2) adding required capacity at the edge required by CSU instructors, TA's and graders from inside CSU who are the instructors accessing the LMS to delivering the credentialing in the LMS, and 3) adding capacity from ubiquitous student access into the LMS from student labs, Wi-Fi, and other networking access points used by students. Finally, we also note that some of the switches are used by the testing center which provides a wide variety of testing, including placement testing via credentialing for math, composition, and for other select areas, including GRE, SAT, etc.
2. **Erase equity gaps** – Critical areas to be supported by the switch upgrade include the student diversity organizations: Asian/Pacific American Cultural Center, El Centro, Black/African American Cultural Center, Native American Cultural Center, and Women and Gender Diversity Center. Also, select residential dorms including the living/learning communities, and the key communities need enhanced connectivity to campus resources via the proposed core infrastructure.
3. **Improve student success** – Excellent networking infrastructure is essential to the conduct of all education and research in today's digital environment. Most notable is the need for high-speed, high-quality access to our digital Learning Management System, Canvas, used by nearly 100% of our 30,000 residential students in over 69% of our 6,502 course sections, and by 100% of our 4,000 online/distance students. Content, Canvas plug-ins, electronic textbooks, adaptive courseware, an increasing number of enhanced learning objects (videos, computer education games, virtual reality, etc.), and sophisticated learning analytics environments exist in and are accessible from Canvas – all requiring excellent network access. Also, access to a wide variety of student success services is also digital: EAB Navigate for advising and curricular planning, transferology.com and u.achieve for degree planning, early performance feedback, and a rich suite of Learning Analytics data from Unizin (http://unizin.org) fusing Student Information System data with real-time data from the Canvas LMS all require excellent network access. The LMS is accessed through our core infrastructure behind a firewall, and the upgrade of that core infrastructure is essential to meet evolving needs of capacity and IT security through the core.
4. **Affordability and Innovation** –

    Affordability – Aruba has the best, lowest cost warranty on switches of any vendor – no annual maintenance costs for software updates/patches/security enhancements, and lifetime hardware replacement at no cost for any hardware issues. Their initial purchase prices are in line with those of their competitors. Because of this, the Life Cycle Cost (purchase price, plus accumulated annual maintenance cost) of these switches manifests about a 60% savings over switches purchased from other vendors. This fiscal model is a key component in ensuring our networking environment operates at the very highest quality, and is sustainable.

    Innovation – The congestion we are experiencing in our core networking and edge devices has already significantly limited our research/innovation environment. The proposed upgrade will yield two distinct benefits: 1) our users will be universally equipped with gigabit interfaces to the desktop and to

contemporary, high-speed Wi-Fi access points (indeed, next generation Wi-Fi access points will need to be connected at 10 gigabit), and 2) our core network upgrade from 10 gigabit to 100 gigabit will be able to accommodate multiple large buildings connected at 10 gigabit to our networking core. Simple math indicates that this upgrade is needed from a pure aggregation standpoint, as we cannot continue to add any more buildings connected at 10 gigabit to our 10-gigabit core. The core devices upgrade is needed to support connectivity to the shared Summit High-Performance Computing (HPC) System housed at the University of Colorado Boulder, used by over three hundred innovative researchers at CSU, where numerous very large files are transferred regularly. Hundreds of CSU researchers also access other remote HPC systems and databases. A wide variety of application areas need this enhanced connectivity, among the most notable are: extreme ultraviolet laser imaging, climate research, ecosystem sustainability, innovative small-scale weather radar systems, LIDAR systems, space propulsion research, energy systems research, innovative battery research, named data cybersecurity research, next generation materials, life sciences (many specific areas), groundwater pollution modelling, etc. One compelling recent example is deployment of an innovative, next-generation augmented/virtual reality system that is yielding pioneering patents in how doctors review patient MRIs and CT scans. Virtual reality allows doctors and veterinarians to perform more effective and less invasive surgeries - this has already had worldwide impact.

Information on IT Health, Safety and Industry Standards Scoring Criteria:

"Fully supported" – We have been deploying exclusively HP/Aruba edge switches for over a decade. Over this time period, we have enjoyed excellent support, training, and professional development from HP/Aruba, and have found it easy to maintain currency for staff in operations. HP/Aruba has the best warranty on switches of any vendor – no annual maintenance costs for software updates/patches/security enhancements, and lifetime hardware replacement at no cost for any hardware issues. This fiscal model is a key component in ensuring our networking environment operates at the very highest quality, and is sustainable fiscally. However, once switches are beyond "end of life," they are no longer supported by HP/Aruba for software patches, security patches, and software upgrades. This critical situation we are now in will be solved entirely by getting on a seven-year replacement cycle for switches, that this Capital IT Request will allow.

"Cybersecurity" – As mentioned in the previous item, once switches are beyond "end of life," they are no longer supported by HP/Aruba for software patches, security patches, and software upgrades. This critical situation we are now in will be solved entirely by getting on a seven-year replacement cycle for switches, that this Capital IT Request will allow.

"Disaster recovery" – We have a very robust disaster recovery environment with two, physically separate, redundant data centers, each on a separate leg of City of Fort Collins power (which is exceptionally reliable), each with green Uninterruptable Power Supplies that condition and supply power, and each of which is backed up with a generator. In addition to periodic full backups across data centers, we duplicate all transactional data across both data centers such that in the event of a disaster, we can recover all of the transactions and rebuild our systems of record with these transactions, losing no data. However, the full data and real-time transactional data transfers require excellent network connectivity in order to function. As our core network is becoming congested, we will lack the capacity to continue this full and comprehensive disaster recovery model that will be remedied with the requested Capital IT funding.

"Mitigates urgent/serious IT risk" – We believe this has been covered adequately in the above narrative. This upgrade is needed to provide the opportunity to attain a steady-state funding model for all of our network devices, to ensure adequate connectivity to all devices, and to ensure all IT switches are replaced on a periodic cycle and subject to regular patches and software upgrades. Some of our edge network switches that exist in our network today exceed ten years in age (the worst is sixteen years in age). This manifests an existing unacceptable IT security risk that will be remedied with the requested Capital IT funding.

"Life safety function" – We believe this has been covered adequately in the above narrative. This upgrade is needed to provide IT security interfaces supplying Power Over Ethernet (PoE) to life and safety devices including video surveillance devices.

Digital Transformation Initiative for Rural Higher Education

- Adams State University, Fort Lewis College, Western Colorado University -

COLORADO
Department of Higher Education

STATE OF COLORADO DEPARTMENT OF HIGHER EDUCATION

FY22-23 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

#1	(1) Funding Type (Cash, CCF, Cash & CCF):	Cash and CCF	(2) Intercept Program Request? (Yes/No):	No
#2	(1) Institution:	Adams State University Lewis College Fort Western State University	(2) Name & Title of Preparer:	Kevin Daniel (ASU), Matt McGlamery (FLC), Chad Robinson (WCU)
#3	(1) Project Title:	Digital Transformation Initiative for Rural Higher Education: A collaboration of ASU, FLC and WCU	(2) E-mail of Preparer:	kvdaniel@adams.edu, mcglamery_m@fortlewis.edu, crobinson@western.edu
#4	(1) Project Phase (__ of __):	2 of 2	(2) State Controller Project # (if continuation):	
#5	(1) Project Type (IT):	Capital IT	(2) Institution Signature Approval:	See attached cover letter for Institution Signature Approvals for all three Institutions
#6	(1) Year First Requested:	FY 2021	(2) CDHE Signature Approval:	Date
#7	(1) Priority Number (Leave blank for continuation projects):	1 of 1	(2) OSPB Signature Approval	Date

		(a) Total Project Costs	(b) Total Prior Year Appropriation(s)	(c) Current Budget Year Request	(d) Year Two Request	(e) Year Three Request	(f) Year Four Request	(g) Year Five Request
	Land / Building Acquisition							
#8	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#9	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#10	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
#11	Consultants/Contactors	$ 16,262,000	$ 4,300,000	**$ 11,962,000**	$ -	$ -	$ -	$ -
#12	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#13	Training	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#14	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#15	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#16	Other Services/Costs	$ 1,000,000	$ 350,000	**$ 650,000**	$ -	$ -	$ -	$ -
#17	Inflation Cost for Professional Services	$ 139,500	$ 139,500	$ -	$ -	$ -	$ -	$ -
#18	Inflation Percentage Applied		3.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
#19	***Total Professional Services***	$ 17,401,500	$ 4,789,500	$ 12,612,000	$ -	$ -	$ -	$ -
	Associated Building Construction							
#20	Cost for New GSF's	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#21	New \$_____/GSF							
#22	Cost for Renovate GSF	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#23	Renovate \$____/GSF							
#24	Site Work,Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#25	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#26	Inflation for Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#27	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
#28	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
#29	Software COTS	$ 5,680,000	$ 4,000,000	**$ 1,680,000**	$ -	$ -	$ -	$ -
#30	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#31	Inflation on Software	$ 60,000	$ 60,000	$ -	$ -	$ -	$ -	$ -
#32	Inflation Percentage Applied		1.50%	**0.00%**	0.00%	0.00%	0.00%	0.00%
#33	***Total Software***	$ 5,740,000	$ 4,060,000	$ 1,680,000	$ -	$ -	$ -	$ -
	Equipment							
#34	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#35	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#36	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#37	Network Equipment/Cabling	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#38	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#39	Miscellaneous	$ -	$ -	$ -	$ -	$ -	$ -	$ -
#40	***Total Equipment and Miscellaneous Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
#41	***Total Project Costs***	**$ 23,141,500**	**$ 8,849,500**	**$ 14,292,000**	$ -	$ -	$ -	$ -
	Project Contingency							
#42	5% for New	$ 442,475	$ 442,475	**$ -**	$ -	$ -	$ -	$ -
#43	10% for Renovation	$ 1,429,200	$ -	**$ 1,429,200**	$ -	$ -	$ -	$ -
#44	***Total Contingency***	$ 1,871,675	$ 442,475	**$ 1,429,200**	$ -	$ -	$ -	$ -
	Total Budget Request							
#45	***Total Budget Request***	**$ 25,013,175**	**$ 9,291,975**	**$ 15,721,200**	$ -	$ -	$ -	$ -
	Funding Source							
#46	Capital Construction Fund (CCF)	$ 24,763,043	$ 9,139,055	**$ 15,363,988**	$ -	$ -	$ -	$ -
#47	Cash Funds (CF)	$ 250,132	$ 92,920	**$ 157,212**	$ -	$ -	$ -	$ -
#48	Reappropriated Funds (RF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
#49	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	**25,013,175**	**9,291,975**	**15,721,200**	-	-	-	-

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2022-23 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$15,563,988**	
Cash Fund Amount (CF):	$157,212	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Adams State University, Fort Lewis College, Western Colorado University	
Project Title:	Digital Transformation Initiative for Rural Higher Education: A Collaboration of Adams State University, Fort Lewis College, and Western Colorado University	
Project Phase (Phase _of_):	2 of 2	
State Controller Project Number (if continuation):	Have not received yet *as of 5/24/21	
Project Type:		Technology Hardware
	x	Technology Software
Year First Requested:	FY 2020-2021	
Priority Number (Leave blank for continuation projects):	___ OF ___	
Name & Title of Preparer:	Kevin Daniel (Adams), Matt McGlamery (FT Lewis), Chad Robinson (Western)	
E-mail of Preparer:	ksdaniel@adams.edu, mcglamery_m@fortlewis.edu, crobinson@western.edu	
Institution Signature Approval:	See attached cover letter for Institution Signature approvals from all three Institutions	
OSPB Signature Approval:	Date	
CDHE Signature Approval:	Date	

A. PROJECT SUMMARY/STATUS:

Provide a brief scope description of the project and explain the status of the prior appropriated phases. See instructions for further detail.

This project, the *Digital Transformation Initiative for Rural Higher Education: A Collaboration of Adams State University, Fort Lewis College, and Western Colorado University*, is intended to radically increase the efficiency and effectiveness of our respective institutions by modernizing our legacy enterprise information and student information systems.

This submission is for Phase II, a continuation of our project that was funded for Phase I in fiscal year 2021-2022. This second phase will modernize all three campuses' Student Information systems in the final step of our Digital Transformation Initiative. This includes all components of our student-facing systems including Financial Aid, Student Records, Advising, Registration, and other services critical to student success in Higher Education.

At the time of this submission in May of 2021, our project team, with representation from all three institutions are engaged in the scoping, contracting, and project initiation phase of implementation for Phase I of our project. Prior to final funding through the Long Bill, our project team continued the ongoing collaboration and preparation required to launch the project as quickly as possible once funds were approved. We expect to complete Phase I of this project in 10-12 months, with a go-live plan in summer of 2022.

This is a continuation request for $15,563,988. It is not mandated.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$24,763,043	$9,199,055	**$15,563,988**	$0	$0	$0	$0
Cash Funds (CF)	$250,132	$92,920	**$157,212**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$25,013,175**	**$9,291,975**	**$15,721,200**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

Provide a detailed description of the project, phases, funding and any other information relevant to the project. Include information on best practices. Describe how the project fits in with the Higher Education Master Plan goals.

Title:

Digital Transformation Initiative for Rural Higher Education: A Collaboration of Adams State University, Fort Lewis College, and Western Colorado University (Phase II).

Goal:

This project intends to radically increase the efficiency and effectiveness of our respective institutions by modernizing our legacy enterprise information and student information systems.

Introduction:
Enterprise Resource Planning systems (ERPs) exist to help manage the core operations of an institution or business. Most ERP systems manage at least the human resources (positions, benefits, timekeeping, timekeeping, etc.) and finance (budgeting, accounts payable, accounts receivable, payroll, etc.) aspects of an operation. Institutions of higher education have an additional core operation: managing the business of educating our students. This expansion of the standard ERP is generally referred to as a student information system, or SIS. This system addresses education-specific needs like admissions, registration, course management, scheduling, degree planning, faculty assignments, transcripts, degrees and the myriad of other tasks involved in managing the matriculation, education, graduation and often the ongoing relationship with our students and alumni.

All the public (and likely all the private) institutions of higher education in Colorado employ ERP/SIS systems in some form and have done so since at least the early 1980s. The partners in this project, Adams State University, Fort Lewis College, and Western Colorado University, acquired their current ERP/SIS solution, Ellucian Banner, in 1992, 1989, and 1992, respectively. All three institutions currently host most or all of their ERP/SIS components at their respective institutions.

In the decades since, while there have been innumerable upgrades, the basic structure of the Banner system has remained unchanged: a traditional database backend coupled with an administrative mid-layer and a web-based front end for our end users (students, faculty, and staff). Concurrently, we have also added supplemental systems to augment the function of the core to allow for new features and capabilities that were either not available from the ERP or were deemed too costly.

For the last 30 years, Ellucian Banner was considered the leading (if not the only) ERP/SIS system available for institutions of higher education. Currently, 15 of the 16 public institutions of higher education in Colorado use Banner. However, in the last few years viable modern competitors offering robust, complete solutions have emerged. After reviewing these alternative solutions, we believe it is time to pursue other options. Several other Colorado institutions of higher education are following suit and exploring their options to modernize their systems as well.

The Partnership:
While Adams, Fort Lewis, and Western are inarguably unique, as small, rural, geographically remote, comprehensive four-year institutions, we share many of the same needs and face many of the same challenges. Joining to effectively create an entity of more than 11,000 students, faculty and staff allows us to realize better volume-based pricing. By collaborating on implementation, we save time and expense by sharing and standardizing business processes that can be built once and shared among the institutions. We estimate the direct savings realized by a joint project to be 30-40% for implementation and 20-25% for ongoing costs. By sharing a common digital platform, the ongoing collaboration and sharing of best practices and processes will yield dividends for years, if not decades.

The Project:
This project is the replacement of our legacy ERP/SIS with a modern, customer-centric, intuitive, cloud-based, scalable, forward-thinking, low-maintenance, cost-effective product that provides as many solutions for our collective institutional needs as possible. Ancillary to, but perhaps equally important, is the comprehensive re-evaluation and improvement of essentially all current business

practices. To initiate the project, ASU, FLC, and Western prepared and solicited responses from vendors through an RFI (request for information) process in the Spring of 2019. The information requested from the vendors sought to assist in establishing an ERP/SIS initiative that will:

- Provide modern, state-of-the-art solutions to the ERP and SIS systems at each institution for operating the human resources, finance, and student educational aspects of the organizations;
- Simplify and standardize business processes across all three institutions where possible;
- Eliminate department and system specific "shadow" systems, such as MS Excel spreadsheets, MS Access databases, manual reports, and forms that staff use due to current systems and processes not meeting the needs;
- Reduce the number of vendor products and integrations;
- Reduce manual processes and duplicative data entry;
- Eliminate multiple sources of the same data, information, and other electronic content;
- Improve or upgrade reporting and analytics tools;
- Provide modern methods and documentation for integrating the ERP/SIS system with third-party vendors and systems; and
- Enable ASU, FLC, and Western to make significant progress toward the Colorado Department of Higher Education strategic goals to:
    - Increase Credential Completion;
    - Erase Equity Gaps;
    - Improve Student Success; and
    - Invest in Affordability and Innovation.

Over the past two years, from the time we initially submitted this project for consideration, our three campuses have jointly spent a significant amount of time and effort in reviewing the vendor offerings available. After an initial screening of the RFI respondents by the IT Departments for basic qualifications, we identified two finalist vendors. The finalist vendors provided several demonstrations of their products, which were further evaluated by our respective IT departments, as well as members of the functional areas of our campuses including Financial Aid, Finance, Human Resources, Registrar's Office, Admissions, Student Business Services, Academic Affairs, Institutional Reporting, and others.

At the conclusion of our reviews, we surveyed all employees who attended demonstrations from our two finalist vendors. Based on those survey results and the assessment of the project's leadership, we have identified our preferred vendor as Workday. After considerable discussions with Workday, we have also chosen to use Workday's in-house implementation services instead of contracting with a third-party implementation partner. By using Workday services directly, we reduce project risk by eliminating the middleman and working directly with the engineers and resources within Workday. Fortuitously, Workday participates in a cooperative pricing agreement we can leverage to simplify the contracting process. Finally, as we have chosen the Workday solution for Phase I and for Phase II, there will be no need for an additional lengthy RFP process.

Funding:
Funding from sources outside our respective institutional budgets is existential to this project.
Upgrading an institutional ERP/SIS system is challenging, time-intensive and expensive. Our budget for this project is based on estimates provided by our selected vendor through several scoping meetings

and system reviews. These estimates reflect what we consider the *maximum* we would need to expend. The partnership intends to contribute 1% of their own funds from reserves.

As mentioned in the introduction, we expect substantial savings by collaborating on this project. This is true for both the up-front implementation and ongoing costs. For implementation we expect to save between 30 and 40 percent. By realizing economies of scale on the subscription costs, we expect to save between 20-25% annually.

Project Schedule:
This project will take approximately four years to complete. We are requesting funding in two distinct phases. The solutions we have investigated have three major sections, Human Resources (HR), Finance, and Student. HR and Finance are typically implemented together, followed by the more complicated Student module.

Phase 1.
Implementation: HR and Finance
July 2021 – June 2022
Human Resources and Finance modules will lead, as they are typically less complex. The cost for *Phase 1* is $9,291,975 representing approximately 37% of the total cost of implementation.

Phase 2.
Implementation: Student Services
July 2022 – June 2024 (if funded subsequently)
As the most complex (and unique to higher education), the student module will be implemented after HR and Finance. Exact timing will vary, but will roughly follow the student lifecycle, beginning with Admissions and Recruiting. The cost for *Phase 2* is $15,721,200 and represents the remaining 63% of the total cost.

Finalization and Transition to Normal Operations
July 2024 - June 2025
Assess the implementation, reconcile problems and move into normal operations. Complete the final decommissioning of our legacy systems.

Alignment with Colorado Rises:
This project strongly aligns with all four Strategic Goals of the Colorado Rises Higher Education Master Plan: to Increase Credential Completion, Erase Equity Gaps, Improve Student Success, and Invest in Affordability and Innovation.

Goal #1: Increase Credential Completion
By implementing and utilizing a modern Student Information System, students at all three universities will be equipped with modern tools that will simplify and streamline the administrative functions they must perform to stay on-target to complete their credentials. From easier and faster admissions applications and processing, to a seamless financial aid experience, intuitive registration and academic scheduling capabilities, students will be able to handle the business of being a student more simply and quickly, which will allow them to dedicate more time to their coursework, co-curricular activities and scholarly endeavors en route to earning their credentials and degrees.

Additional tools such as automated degree progress monitoring and data analytics and insights will help indicate when students may need help, and will allow our institutions to proactively help students navigate difficulties and barriers to their successful credential completion throughout their tenure at our institutions.

Goal #2: Erase Equity Gaps

A large percentage of the students enrolled at the three institutions face significant challenges that make degree attainment more difficult. These include many factors, including coming from low-income households, being the first in their families to seek a degree, and representing communities historically underserved by colleges and universities. Further, Adams State University is a federally designated Hispanic Serving Institution (HSI), and Fort Lewis College is a designated Native American Serving Non-Tribal Institution, which clearly illustrates that our missions and operations are in full support of serving these student populations throughout their higher education pursuits. We currently work diligently to erase equity gaps in educational attainment rates that affect so many of our students. This project will enable our institutions to acquire a modern system with an intuitive user-interface and multilingual support so we are well positioned to continue erasing these equity gaps.

Goal #3: Improve Student Success

We expect to improve student success by acquiring and implementing a system with a modern and intuitive user interface with advanced mobile features, simplified all-in-one architecture, built-in student communication tools and by repurposing staff time now spent on manual, outdated processes. Modern ERP/SIS solutions are designed with the customers, our students, and faculty in mind, rather than the staff-centric design of our legacy system. New systems feature an intuitive interface and advanced mobile features that have the look and feel of mainstream commercial products (Amazon, Facebook, etc.), which allow students to quickly and easily take care of the administrative tasks required for successfully navigating to a degree. Modern systems are more comprehensive (all-in-one) so a student can apply for admission, register, get their grades, pay their bills, plan their degrees, and apply for graduation all within the same system and often entirely from their mobile device. Perhaps most importantly, by introducing a more capable system that includes modern features like workflow, document management, data visualization tools, analytics, self-service reporting, mobile device time entry, electronic signatures and other features, we will dramatically reduce the time required to do routine (often paper-based) tasks. This liberated time will be repurposed to focus on tasks and projects (retention, tutoring, advising, etc.) that contribute directly to student success.

Goal #4: Invest in Affordability and Innovation

Affordability: Modernizing our ERP/SIS system is expected to contribute to affordability by slowing the rate of cost increases by avoiding on-premise infrastructure costs, getting more value per dollar, allowing for ongoing collaboration, and reducing the need to compete for personnel.

By moving to the cloud, we avoid the costs of buying and maintaining servers, storage, and other datacenter expenditures. The cloud services are subscription-based, allowing us to avoid the capital purchase of software licenses. We expect to get better value as modern systems are able to bundle what are now considered 'basic' components all in one system. Our legacy solution often requires paying extra for new components as well as paying for the consulting services to implement them,

despite being in the same system. Over time, we have also had to acquire additional software for features the primary system did not have, or were slow to produce. Beyond the direct benefits of system modernization itself, by collaborating, we are able to realize some economies of scale that will further reduce our costs in the short and long term (see *The Partnership*). Finally, and the change that will likely have the greatest financial impact over time, will be the decrease in need to hire and retain the highly skilled and compensated employees that maintain and upgrade the complex combination of software and hardware needed to support the legacy system.

Innovation: By investing in modern cloud architecture, our ERP/SIS system will always be on the most current version, ensuring our students and staff have access to innovative features and benefits in the shortest possible timeline. Our current legacy ERP system requires extensive effort from our IT staff to perform routine system and security patching and updating. Modern ERP systems eliminate this burden by performing all updates in their cloud-hosted environments. Further, new functionality and critical security updates are introduced and delivered to the system much more rapidly due to this new technology architecture.

D. PROGRAM INFORMATION:

Provide a description of the programs within the institution that will be impacted by this request.

This project will affect, to varying degrees, the entirety of all three institutions. Specifically, the core operations of our institutions including human resources (positions, benefits, timekeeping, etc.), finance (budgeting, accounts payable, accounts receivable, payroll, etc. in phase I), as well as the functions required for educating students (admissions, registration, financial aid, courses, scheduling, degree planning, faculty assignments, transcripts, degrees), and other tasks involved with managing the matriculation, education, graduation and ongoing relationships with our students and alumni in phase II. Additionally, the entire digital experience for students and faculty will be modernized and improved through the new system.

E. CONSEQUENCES IF NOT FUNDED:

Provide a description of consequences if this project is not funded. See instructions for further detail.

To achieve our long-term cost-savings and service enhancement goals it is critical Phase II of this project is funded. While Phase I will certainly add value and improve efficiencies for some of our constituents upon its completion in 2022, our overall goal of transforming our entire ERP/SIS environment to provide will not be realized until Phase II is completed. Only upon completion of Phase II will our institution's able to fully decommission our legacy systems and all of the hardware, third-party applications, licenses, consultants, and all other infrastructure that is currently needed to support those legacy systems. Our 10 year cost savings projections are predicated on the full implementation of both phases, and deliver the maximum return on investment and value to our institutions and the State of Colorado. If we do not complete both phases of the project all three institutions will have higher annual costs than they would have if they had not started the project in the first place.

F. ASSUMPTIONS FOR CALCULATIONS:

Describe the basis for how the project costs were estimated. Include inflation assumptions. See instructions for further detail.

The initial project costs submitted in 2019 were based on estimates provided through our joint RFI process. Since the initial submission year, we selected Workday as our vendor and have engaged in scoping exercises, conversations with functional areas, product demonstrations and many question and answer sessions to further refine our institutional needs and project scope. With this additional knowledge we have been able to more accurately determine the project costs..

The cost of Phase II of the project has increased beyond our original estimates. The main driver for this is the cost of implementation, which has increased due to basic inflation and substantial expansion of the vendor's product. We developed our original estimates over two years ago in 2019 for funding in 2020. Despite being on the cusp of funding, the COVID pandemic intervened and delayed Phase 1 of the project a full additional year. Using an escalation rate of 7% (the annual rate used by our current vendor), the project costs have increased by $1,957,000. Additionally, over the past two years the vendor's SIS product (Student Module) has rapidly matured and expanded, adding roughly 1,000 enhancements and capabilities, increasing the overall scope of the project and thus increasing implementation costs by 15%. The cost increases are summarized in the table below and are reflected in the COST SUMMARY (CC_IT-C).

Estimated Implementation in 2019	**$8,700,000**
7% Price escalation over 3 years	+ $1,957,000
15% Student Module Expansion	+ $1,305,000
Estimated Implementation in 2022	**$11,962,000**

The funding request includes implementation fees and subscription costs incurred for the duration of the project. The estimates provided for Phase II for Professional Services and Software Acquisition in the COST SUMMARY (CC_IT-C) assume that we would contract at the stated rate, which would not have any variable inflation costs.

We opted to use the 10%($1,429,200) contingency requirement for this phase due to the complexity of the Student portion of the project. The contingency funds are needed in the event that we must address unforeseen implementation challenges. At the time of submission, we are in the final stages of implementation scoping, and have not yet negotiated the final cost of implementing Phase II. In the event that we are able to implement the project without utilizing the contingency, the unspent amount reverts to the State.

G. OPERATING BUDGET IMPACT:

Detail operating budget impacts the project may have. See instructions for further detail.

There is no expected impact on operating appropriations for each institution. By the end of the project, the current expenses of the on-premise legacy systems will be replaced by the ongoing subscription costs of the cloud-based systems. No additional FTE will be required to operate the systems, however, some FTE will be repurposed to work on strategic initiatives and priorities.

H. PROJECT SCHEDULE:

Identify project schedule by funding phases. Add or delete boxes as required for each phase. See instructions for further detail.

	Start Date	Completion Date
Pre-Design	**January 2019**	**May 2021**
Phase 1 of 2: HR/Finance	**July 2021**	**June 2022**
Phase 2 of 2: Student	**July 2022**	**June 2024**
Finalization	**July 2023**	**June 2025**

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	x Yes ❑ No
Request 6-month encumbrance waiver:	x Yes ❑ No
Is this a continuation of a project appropriated in a prior year:	x Yes ❑ No
State Controller Project Number (if continuation):	*Have not received as of 5/24/21

CONTINUATION HISTORY: (DELETE IF NOT APPLICABLE)

	FY 2XXX-XX Appropriated	FY 2XXX-XX Appropriated	FY 2XXX-XX Appropriated	**Total Appropriations**
Total Funds				
General Fund				
Cash Funds*				

Reappropriated				
Federal Funds				

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

Describe the cost savings or improved performance outcomes as a result of this project. Please clearly identify and quantify anticipated administrative and operating efficiencies or program enhancements and service expansion through cost-benefit analyses and return on investment calculations.

***Direct Cost Savings**:*

In the short term, there will be little in the way of direct cost savings as most of what we currently spend on our ERP/SIS will be redirected into the new system. Into perpetuity, we will realize substantial cost avoidance for infrastructure and personnel costs associated with maintaining on-premise solutions.

Improved Performance Outcomes:

Operational efficiency and effectiveness. We expect an increase in overall operational efficiency from moving to the cloud, adopting a more inclusive solution, improving flexibility and extensibility, and modernizing the user interface to a more robust, intuitive and user-friendly experience.

By moving to a cloud-based system, we dramatically reduce the time required for upgrades, managing performance, security, database management, and infrastructure maintenance. The cloud model ensures we are always using the most current version, so we gain the benefits of improvements immediately.

By adopting a more inclusive solution with nearly all the basic functions needed to effectively manage an institution in one place, we reduce the need to maintain complex integrations, simplify data management, improve access to data for decision makers, simplify reporting, and decrease the number of applications our end users need to learn.

By moving to a solution with a more modern and intuitive interface, employees will be more productive faster with less training (less ongoing functional training costs) and will no longer need to supplement the ERP/SIS with external systems (e.g. MS Excel) to make the data useful to non-expert users (executives, managers, faculty, etc.). Newer ERP systems typically include report and workflow libraries and templates based on best-practices that enable easily created and configured workflows and automation.

Specific examples of areas we expect to realize improvement include:

- At Adams State University, several opportunities for significant improvement over our current processes exist. Most significant would be through taking advantage of a modern system with built-in workflow and business process automation functions. Currently, we process a significant amount of work through paper-based processes, such as hiring forms and approvals, purchasing approvals, travel, and many more. Modern ERP systems, combined with best-practice implementation and collaboration with Fort Lewis and Western would greatly reduce

the time and effort required to process these basic administrative functions. With respect to our students, a new and modern interface that is intuitive and mobile-device friendly would greatly improve their experience and satisfaction with our services as they progress through their academic journey. Our campus support staff would be able to locate the information students need much more quickly through the new system, which would allow more meaningful interactions with students regarding their academic progress and future versus the significant time it takes to help students within our current legacy ERP. This benefit links strongly with our institution-wide initiative, the "Adams Experience." Also, ASU would realize a significant efficiency improvement by taking full advantage of the cloud software-as-a-service (SaaS) architecture of a modern ERP system. Currently, a significant level of effort and time is required by our highly technical staff on building, upgrading, testing, securing, and integrating other systems with our legacy ERP. These positions are exceedingly difficult to fill, and often remain open for months, if not years. By moving to a modern system and vendor who performs these tasks, our staff would be able to focus their talents and efforts on ASU-specific projects and initiatives that may have a much more significant impact on the recruitment and retention of our students. Lastly, ASU has been unable to afford some of the additional "bolt-on" and third-party systems that integrate with our legacy system, such as robust analytics and business process workflow tools. Implementing a modern ERP/SIS system that has these services and features built-in would greatly improve our toolset and abilities to more effectively operate our institution and support our students.

- At Fort Lewis College, we utilize several products to manage the student curriculum and student experience. This can lead to confusion and inconsistent information for the student. The modern systems include as a core feature, degree auditing and curriculum management. Once a student maps out a degree path, that information is easily displayed to the student keeping them on track to completion. The degree paths are then used as data to predict future class sizes and faculty needs, offering students the classes when they need them in their academic career. This also facilitates registration of classes for students, giving them the option to easily choose classes which meet their timelines and objectives while efficiently keeping them on track to graduate. The systems also facilitate curriculum development, giving the administration the information necessary to design new classes and curriculum and to model changes in the curriculum. Besides curriculum management, the modern systems also include student success incorporated into the core product verses adding on as an additional product. The student success functionality provides both the student and administration key indicators on a student's progress and allows the college to proactively help students to achieve their academic and professional goals. This provides for a better student experience, student retention, and increased administrative efficiencies.

- At Western, we currently manage expense reimbursement through a cumbersome paper process that takes several days to more than a week to complete. It often requires days in inter-office mail being routed for signatures, getting to accounts payable. It is not uncommon for the paper documents to go missing and the process restarted. A modern solution, leveraging a mobile app, digital workflow and digital document management could easily reduce the time it takes to complete the same process by 90%. In addition, the accountability is far improved and the data and supporting documents (digital photo of receipts) are stored together. We have dozens of similar processes (employee onboarding, changing academic

majors, requesting accounting changes, etc.) that can be made more effective. In addition to specific process examples, Western currently maintains a complex separate set of systems to provide reporting, analytics and dashboarding. The solution we have selected will include that functionality natively, eliminating the maintenance of those systems and allow Western managers access to an intuitive reporting and analytics tool they can use to better manage their areas using real time data.

As the ERP/SIS so broadly affects the institution, it is difficult to precisely quantify an estimate of the impact of improvement. However, to put it into perspective: ASU, FLC and Western employ about 761 staff and 420 faculty. Accounting for variations in contract length, the institutions combine for 2,236,520 work hours per year. For every 1% increase in efficiency, we realize 25,214 work hours, or approximately 10.75 FTE (see table below). In their RFI responses, some vendors claim efficiency increases in selected areas of up to 90%. We do not think it is unreasonable to expect efficiency gains on the order of 5% campus-wide, freeing over 100,000 work hours that will be dedicated to more valuable activity and progress toward our respective strategic goals.

Hours returned annually by increasing the efficiency of the combined workforce of the partner institutions.

Efficiency Improvement	Hours Returned (annually)
1%	25,214
3%	75,642
5%	126,070

Student Success:
Modern, cloud-based, intuitive solutions with sophisticated mobile apps, will simply make it easier for students to navigate the complexities of a higher education institution. They will apply for admission, register for classes, plan their degrees, access their schedules, pay their tuition, apply for graduation, and request their transcripts all through one system, often using only their phone. Beyond the direct impact afforded by ease of use, modern solutions include tools that improve communication with the students, helping the institution engage more readily and recognize students that need assistance. By utilizing the integrated analytics capabilities, early analysis of risk factors may lead to successful interactions with students, enabling them to be more successful in their pursuit of a degree at our institutions. More details toward improving student success are outlined in Section C, Alignment with Colorado Rises Higher Education Master Plan Goals.

Additional COVID-19 Justification and Response Summary of Project Impact:
As Colorado, the United States, and the world have struggled to cope with the global pandemic and the new realities of trying to perform business safely, securely, and oftentimes at a distance, the Universities strongly believe that there are compelling reasons to consider this project even more

directly to address these issues. The following section provides a high-level summary of how this project would have benefited our Universities and students, as well as how the technology and service improvements we would gain through the project would be useful in a similar crisis or, if the current COVID-19 recovery continues even further into the future.

- Cloud/SaaS vs. on-premise infrastructure- A new, modern ERP system in which the infrastructure (hardware servers, storage, networking, security, etc.) is hosted across multiple data centers hosted by the ERP provider greatly improves our ability to maintain a high level of service for all faculty, students and staff compared to our current on-premise systems. Cloud-based SaaS solutions also include 24/7 dedicated support to ensure the system remains available and any issues that arise are handled directly by the vendor, instead of relying on University staff to enter the workplace to diagnose and repair issues. COVID, and other similar crises, makes face-to-face support and on-campus work dangerous and risky, a cloud/SaaS solution mitigates this risk.
- Digital workflow- Built-in workflows and business processes greatly improve efficiency and automates critical processes required to run our institutions. This enhances our capacity to work remotely, reducing the reliance on face-to-face communication. Built-in document upload, capture, and management features would allow students and employees to input digital versions of paper forms required for various processes without requiring face-to-face interactions.
- Eliminate the need for Virtual Private Networks (VPNs) to access the ERP- All three Universities spent significant time, effort, and budget resources to rapidly deploy and deliver VPN networks to enable the Universities' workforces to transition to remote-work on extremely short notice. Modern ERPs are designed to be accessed over the Internet, securely, without the need for VPNs and other on-premise connectivity tools. Each institution likely experienced several days (or more) of lost or greatly reduced productivity by their staff as we scrambled to image and deploy laptops, setup VPNs, and remotely supported our employees to get connected to our legacy ERP systems on their home networks. Modern ERPs can be securely used on mobile devices and consumer-grade equipment, which would have kept productivity high and uninterrupted in the transition to remote working.
- Mid-term and long-term efficiency and effectiveness- The full impact of COVID on the State's budget and our institutional budgets is unknown. Funding challenges are highly anticipated, and the need to find ways for our institutions to do more work more effectively with the same or smaller levels of employees is a hard reality we must face. A modern cloud-based ERP system, deployed using industry and higher education best practices, and utilizing modern technologies, can gain our institutions the capacity to do "more with less" as we chart our path forward post-COVID.
- Collaboration amongst our three Universities- As outlined extensively in our proposal, by working together to standardize our business processes whenever possible, and sharing our knowledge, resources, and experience, our Universities would be positioned well to help each other more directly. For instance, if one University's payroll manager contracted COVID and was out for an extended period of time, the other Universities could offer help and support to ensure payroll processes could run.

- Improved user interface, easier onboarding of new employees- A modern, intuitive, digital-first interface would allow newly hired employees, who may be working at a distance, to become productive and able to use our systems much faster than current systems that are difficult to use and require up-front training.
- Improved and new features through Self-Service- The newer ERP solutions have significantly improved and streamlined features that can be done by students, faculty, and staff directly within the product. This would greatly reduce and eliminate paper-based processes that are extremely difficult to manage under a remote work and learning model such as the situation created by COVID. The student experience will be improved for all students regardless of place and device.
- Subscription-model pricing versus capital expenditure model- By moving to a Software as a Service (SaaS) subscription model, instead of a CapEx model which requires purchasing licensing, hardware, and infrastructure, the budgeting of ERP costs becomes more streamlined with less fluctuation in annual costs.
- Fewer third-party integrations, easier to support- By reducing and eliminating many of our third-party integrations that our legacy systems require to fulfill the needs of the campuses, a modern, more robust ERP would simplify IT support operations and refocus our IT staff to engage in more mission-critical problem solving for our campuses.
- Ready to implement- The three Universities will be completing phase I in June 2022, and will be immediately prepared to start on our phase II implementation. Once funding is available, the projects would start immediately for the three Universities.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

Describe the data protection and disaster recovery considerations factored into the plan. Indicate any cybersecurity implications if applicable.

Data Protection:

Modern cloud systems are designed with data protection as a core design principle. Data is encrypted:

- At rest while stored in the database and auxiliary storage. Backups are encrypted by the vendor, relieving the customer of this responsibility and workload.
- In transit while moving between servers, over the network and to the end user.
- In use by the end user devices through industry standard encryption and certificates.

Data is protected:

- From unauthorized use and display by security roles. Security roles reduce the complexity of data administration, manual mistakes are eliminated, and the workload to maintain proper data authorization is greatly reduced.

Data is logged:

- Systems are capable of effectively logging and reporting on every interaction with the data, be it creating, viewing, updating, or deletion.

Disaster Recovery:

Modern cloud systems are architected with disaster recovery as a core design principle. Data is replicated and distributed between physical data centers, which are geographically disbursed. Data

replication assures that minimal or no disruption of services occurs when inevitable problems or failures arise. The cloud vendors are responsible for the ultimate disaster recovery backups, which are contractually guaranteed. Due to the cloud service, should a major disaster happen at an institution, the systems would continue to operate as normal.

Cybersecurity Impacts:
For a cloud vendor, security is core to the business model. The vendors have security teams much larger than any individual college or university. In a multitenant cloud or Software as a Service (SaaS) environment, all customers are impacted and benefited by the security measures of the system. The vendors regularly monitor, test, and update the system at a pace far greater than individual colleges and universities are capable of. This increased security at the system and application levels reduces the workload of the colleges and universities, allowing them to redistribute that effort to other areas such as cyber security awareness training and compliance.

Compliance:
The modern cloud systems are compliant with the multitude of compliance regulations to which higher education is subject. These include FERPA, HIPAA, PCI, Sarbanes-Oxley, Red Flag, ADA and many others. The vendors' responsibility is to maintain compliance and upgrade, test and implement the compliance features. Because the vendors are upgrading the systems on a regular basis, this removes the burden from the institutions to implement and maintain the upgrades. Compliance is attained faster and easier than our current on-premise systems.

L. BUSINESS PROCESS ANALYSIS:

Describe alternatives analyzed, cost-benefit analysis, and measures in place to prevent time and cost overruns. Articulate how the proposed project fits in with the institution's strategic IT plan.

Alternative	Pros	Cons
Stay with current system and vendor	• Well-established vendor with long track record in higher education • Current market leader • Well understood by functional and IT staff • Widely used by our peers in Colorado and nationwide • Mature, functional product • Peer support system in place	• On-premise solution • Requires skilled personnel to update and manage whom are currently expensive and scarce • Incomplete base system that requires either "bolt-on" external system or purchase of additional modules • Additional functionality expensive to purchase, configure and maintain • User interface is dated and unintuitive for new personnel • Requires expensive functional training for users to be proficient • Legacy design (application + database) requires separate management and expense • Analytics must be handled externally • Experiences with poor documentation and vendor support being unable to provide required security features or resolution to major errors in their system in a timely or complete fashion • Turnover in the vendor's support structure • Large number of defects and bug-fixes, requiring on-site IT staff to perform continual updates to keep product functioning • Minimal out-of-the-box reports; creating and modifying reports requires an external report writing product or IT support

Move to the cloud with existing vendor	• Well understood by functional and IT staff • Additional functionally included in baseline offering • Cloud architecture • Application always up to date • Predictable costs	• Larger operational cost • Feature parity between old and new system is not exact and will require training • User interface remains dated and unintuitive • "Bolt-on" products must be reintegrated • Missing features which require purchase of additional products limited to ones provided by vendor • IT staff must learn new architecture • Must migrate to 3rd party systems supported by vendor • Migration is costly and time consuming • Implementing a very large IT project is difficult and poses a risk to the institution • Experiences with poor documentation and vendor support being unable to provide required security features or resolution to major errors in their system in a timely or complete fashion • Turnover in the vendor's support structure • Large number of defects and bug-fixes requiring continual updates to keep product functioning • Minimal out-of-the-box reports; creating and modifying reports requires an external report writing product or IT support
Move to the cloud new vendor	• Modern underlying technology • Contemporary user interface • Cloud architecture • Intuitive user interface (less functional training cost) • Fully integrated ERP and SIS solution by design • Predictable costs • Baseline product has far greater functionality • Implementation of best practices in all business processes enabling more efficiency for functional users • Integrated analytics for data informed decision making • Enhanced cyber security and compliance	• Entire campus must learn new system • IT staff must learn new architecture • Migration is costly and time consuming • Implementing a very large IT project is difficult and poses a risk to the institution • Products not replaced by new system must be integrated

	• Future proofing for new technologies such as artificial intelligence and machine learning • All three universities gain advantage of pooling resources and know-how among institutions allowing for further collaboration • Report and workflow libraries and templates based on best-practices that enable easily created and configured workflows and automation	

Overrun Prevention:
Information technology projects of this size are difficult, complex, expensive, and the path to success is less predictable than in a typical construction project. We have identified the primary risks to this project that fall in the following categories; leadership, vendor, operational and external.

Leadership Risk: This project will be sponsored at the Cabinet and Board level. The implementation team will provide regular reports to the Cabinet and/or the Board of Trustees. The President will inform and formally charge the campus to dedicate the time and resources necessary to complete the project. The respective CIOs will be accountable for the project completing on time and within budget.

Vendor Risk: To mitigate vendor risk, we only considered vendors that have been in business for at least 10 years, have at least 50 higher education clients, and have a stable or increasing market share and sufficient assets to persist for at least 10 years. Additionally, we have included funds (contingency) to deal with insufficiencies in the vendor's product that were not anticipated.

Operational Risk: To offset operational risks, we will be working directly with the vendor's implementation team to manage the implementation. Working with the vendor, we will develop a comprehensive project plan and timeline with specific milestones. The vendor is expected to provide a dedicated certified professional project manager for the duration of the project. Adams, Fort Lewis, and Western will each dedicate a member of our respective staffs to project management.

External Risk: Examples of external or objective risks include unexpected drop in enrollments, sharp reduction in operational funding or unanticipated changes in state or federal requirements. As the vast majority of this project will be outside our respective institutional budgets, this project should be buffered.

Alignment with IT Strategic Plan:
Adams State University: The IT Strategic Plan for Adams State University for 2020-2025 has four overarching strategic pillars that are directly in alignment with the goals of this project:

Pillar 1: Foster Student Achievement

Pillar 2: Champion Practices for Lifelong Learning and Development

Pillar 4: Engage in Innovation and Creativity

Pillar 5: Exemplify Operational Excellence

Within each of these pillars, there are numerous initiatives and tactics that directly align our digital transformation project with the overall goals of the institution. Through a modernized, intuitive, and efficient Student Information System, our students will be able to navigate and focus on high student achievement activities and lifelong learning, without the burden and challenges of our current system. This project is an innovative and creative endeavor that is positioned to truly transform our operational environment by taking advantage of the numerous technical and business process transformations that occur when implementing a modern ERP solution.

Throughout the project thus far, Adams State University faculty, staff, and students have been active in our conversations and investigations into ERP solutions. ASU has gathered feedback directly through surveying, department meetings, system user meetings, and campus-wide open forums. Involvement by the Executive Council and the President's Cabinet at the University has been clearly defined and articulated for the project, and ongoing communication throughout the project has been in place.

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Fort Lewis College: Implementation of modern cloud-based systems highly aligns with the four pillars of the Fort Lewis College Strategic plan. Examples include:

- STUDENTS AT THE CENTER: Modern SIS systems are designed to meet the needs and expectations of today's students. They are mobile-friendly and work on any device the students own. They are intuitive to use and are built using modern interfaces which students are familiar with. They use common language, instead of saying "Bursar Hold" they say, "you have a bill to pay at the cashier's office." They have degree planning systems integrated into the core of the system, allowing students to plan out their degree and easily compare degree paths between majors given the courses they have completed. They automate and simplify tasks such as registering for classes, making payment or allowing parents to see their grades, and paying their bills. Modern systems have student success built into them; they allow advisors, faculty and support staff to immediately engage students in ways which students expect and respond.

- KNOWLEDGE AS ACTION: Modern SIS systems are integrated with the Learning Management Systems (LMS) such as Canvas. They allow for data to easily move from the LMS to the analytics and student success engines of the SIS. They empower students to explore their degree paths and understand the academic options available to them. The systems can allow the College to become nimble in providing new curriculum, certificates, badges and non-traditional credentials. Analytics is built into the core of new systems, tracking and reporting and monitoring data in ways which are not easily accomplished today.

- COMMUNITY AND REGIONAL PARTNERSHIPS: The collaboration between Fort Lewis College, Adams State University, and Western State University is expected to pave the way for future collaboration in other areas. The implementation of the new system also will provide

internship opportunities for students with the implementation partners and industry using the same vendor software.

- SYSTEMS TO FACILITATE SUCCESS: A modern HR, Finance, and Student Information System will directly support the initiatives related to Systems to Facilitate Success.
  - Build an evaluation dashboard (collecting and using data) into all initiatives
    - Analytics are built into the new systems with dashboard capability on all reports and pages. Dashboard creation and data tracking is standardized and simplified.
  - Create systems to streamline communications to students
    - Student dashboards and mobile applications are native to the new systems and provide real-time updates and information to the students. Information is delivered to the students when and how they choose to have it delivered.
  - Build capacity to better understand the quality of FLC academic programs and improve tracking of students.
    - The new systems are one data source or database which facilitates tracking and reporting of students. The systems are capable of consuming external data to add to the existing reporting and dashboards. Functionality such as calculating the cost of instruction is included with most of the systems.
  - Develop systems to leverage knowledge across campus
    - The new systems are one data source which makes available the same data to everyone with appropriate authority to view the data.
  - Review communication processes to eliminate redundancy and better align current policies
    - The individual student and employee dashboards provided with the systems allow for a common and consistent communication method. The new systems have automated workflows and consistent processes to compliment College policy.
  - Provide consistent training to all faculty and staff
    - The new systems automate the on-boarding of employees from the time they submit an application through employment. Training is automatically assigned and tracked through the systems.
  - Develop evaluation and compensation systems that align with the College's goals
    - The new HR systems have best practices functionality built in for compensation and evaluation systems. Tracking is done within the systems eliminating manual forms and processes.

Western Colorado University: Implementation of a modern ERP/SIS broadly aligns with the Western Colorado University 2018-2023 strategic plan by freeing up time spent on inefficient processes to be repurposed on strategic initiatives. This project specifically aligns with Goal 3: Student Experience and Goal 4: Fiscal Sustainability.

- *Goal 3: Student Experience*
  Enhancing the student experience is critical to student success at Western. Capitalizing on the strengths of the University, Western will continue to develop and provide challenging engagement-oriented programming and supportive services for students that will assist in successful academic, leadership and career achievements. In coordination with Goal 2, outcomes for this goal include Western achieving retention rates and graduation rates at or

above peer averages. Metrics for student engagement and satisfaction with student support services will be developed in the first year of this strategic plan.

- *Goal 4: Fiscal Sustainability*
  Western embraces growth as measured in a variety of ways, including growth in enrollment, in our program offerings, in student services, in the institution's benefit to the community and the state of Colorado, and in the people who engage with us to support the institution. Western will improve fiscal sustainability by growing revenue and capturing operational efficiencies. Outcomes for this goal include Western maintaining operational efficiencies below our peer average as measured by the percentage of administrative costs to total costs. Western will also measure growth in total number of gifts received and total funds raised.

Reimagining the Campus Digital Experience

- Metropolitan State University -

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 11/2/2021

CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**Cash & CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Metropolitan State University of Denver	(2) **Name & Title of Preparer:**	Nick Pistentis, Executive Director, IT Application Services
(C)	(1) **Project Title:**	Reimagining the Campus Digital Experience	(2) **E-mail of Preparer:**	npistent@msudenver.edu
(D)	(1) **Project Phase (__ of __):**	2 of 4	(2) **State Controller Project # (if continuation):**	TBD
(E)	(1) **Project Type (CC or CR):**	CC	(2) **Institution Signature Approval:**	Date
(F)	(1) **Year First Requested:**	FY 2021-2022	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**		(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ 6,555,000	$ 1,425,000	**$ 1,400,000**	$ 1,810,000	$ 1,920,000	$ -	$ -
(6)	Quality Assurance	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ 4,363,000	$ -	**$ 1,363,000**	$ 1,500,000	$ 1,500,000	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 10,918,000	$ 1,425,000	**$ 2,763,000**	$ 3,310,000	$ 3,420,000	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ 3,735,395	$ -	**$ 735,395**	$ 1,500,000	$ 1,500,000	$ -	$ -
(24)	Software Built	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	**$ 3,735,395**	**$ -**	**$ 735,395**	**$ 1,500,000**	**$ 1,500,000**	**$ -**	**$ -**
	Equipment							
(28)	Servers	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	**$ 14,653,395**	**$ 1,425,000**	**$ 3,498,395**	**$ 4,810,000**	**$ 4,920,000**	**$ -**	**$ -**
	Project Contingency							
(36)	5% for New	$ 761,605	$ 75,000	**$ 186,605**	$ 250,000	$ 250,000	$ -	$ -
(37)	10% for Renovation	$ -	$ -		$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 761,605	$ 75,000	**$ 186,605**	$ 250,000	$ 250,000	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	**$ 15,415,000**	**$ 1,500,000**	**$ 3,685,000**	**$ 5,060,000**	**$ 5,170,000**	**$ -**	**$ -**
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 13,950,000	$ 1,300,000	**$ 3,350,000**	$ 4,600,000	$ 4,700,000	$ -	$ -
(41)	Cash Funds (CF)	$ 1,465,000	$ 200,000	**$ 335,000**	$ 460,000	$ 470,000	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	TOTAL	**15,415,000**	**1,500,000**	**3,685,000**	**5,060,000**	**5,170,000**	**-**	**-**

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2022-23 CAPITAL CONSTRUCTION/CAPITAL RENEWAL PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	$ 3,350,000	
Cash Fund Amount (CF):	$ 335,000	
Funding Type:	State Funded	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Metropolitan State University of Denver	
Project Title:	Reimagining the Campus Digital Experience	
Project Phase (Phase _of_):	2 of 4	
State Controller Project Number (if continuation):	TBD	
Project Type:		Technology Hardware
	X	Technology Software
Year First Requested:	FY 20_21_ - _22_	
Priority Number (Leave blank for continuation projects):		
Name & Title of Preparer:	Nick Pistentis, Executive Director, ITS Application Services	
E-mail of Preparer:	npistent@msudenver.edu	
Institution Signature Approval:		Date
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

Provide a brief scope description of the project and explain the status of the prior appropriated phases. See instructions for further detail.

Metropolitan State University of Denver first requested financial support from the state in FY 2021-22 to revitalize the University's critical enterprise systems. This project allows MSU Denver to deploy modern software solutions that improve the student experience and streamline University business processes. The result of this effort will be a cloud-based, mobile-friendly digital ecosystem positioned to effectively support 21st century Colorado learners and the dedicated faculty and staff who make that learning possible.

The University thanks the committee for its ongoing support of our mission and commitment to educating Coloradans, and for the recommendation to fund the first year of our project request in the amount of $1,300,000.

We are pleased to report that in calendar years 2020 and 2021, significant progress has been made in this initiative. Following a thorough evaluation of numerous vendors, MSU Denver has formally selected Workday as the solution provider for our Human Resources and Financial system. We are in the process of finalizing an implementation project that will kick off in CY2022, delivering value approximately one year ahead of schedule.

In advance of this implementation, we will spend several months preparing these departments for the project, leveraging external and internal resources to document, review, and revise business processes; audit and clean source data; establish a formal governance and change management regime for this program; and onboard temporary support staff to assist through the transition.

In parallel, we have begun initial analysis of student systems and business processes. In June, we will launch a process review initiative within the Office of Financial Aid, with other student facing offices to follow. We are presently scheduling system demonstrations with market leading Student Information Systems providers, which will take place during Summer 2021.

Due to the generous allocation provided by this body, our collaborative negotiation approach to reduce overall costs, and internal project re-prioritization, we intend to accelerate Phase I and II of the proposed project, and in doing so have been able to reduce our total project request by approximately $1 million.

MSU Denver continues to collaborate closely with Colorado University peers, both formally and informally, to align our ERP/SIS strategies and deliver measurable improvements for students at institutions across the state. In particular, we meet regularly with Colorado School of Mines, University of Northern Colorado, and Colorado Mesa University. Our collaborative approach has yielded a net software licensing savings of over 13%, and we anticipate implementation savings of approximately 20% as a result of our cooperative work. For reference, we have appended the Letter of Intent, signed by the Presidents of MSU Denver, Colorado School of Mines, Colorado Mesa University,[1] and University of Northern Colorado, to the end of this document.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation (Y1)	Current Budget Year Request (Y2)	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$13,950,000	$1,300,000	$3,350,000	$4,600,000	$4,700,000	$0
Cash Funds (CF)	$1,480,000	$200,000	$335,000	$460,000	$470,000	$0
Reappropriated Funds (RF)	$0	$0	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	$0	$0	$0	$0
Total Funds (TF)	**$15,415,000**	**$1,500,000**	**$3,685,000**	**$5,060,000**	**$5,170,000**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

[1] CMU opted to sign on to the Letter of Intent in May 2021.

Provide a detailed description of the project, phases, funding and any other information relevant to the project. Include information on best practices. Describe how the project fits in with the Higher Education Master Plan goals.

In 1996, MSU Denver launched a project to replace an aging mainframe computer system prior to Y2K. The system implemented, Ellucian Banner, has served the University since coming online in 1998. However, in recent years, the age of the system has become apparent, and functionality that was novel in the late 1990's has grown stale and cumbersome. Significant customization has been applied in the intervening twenty-two years, resulting in a system that can be cumbersome to navigate, drives inefficient business processes, and is increasingly challenging to administer.

Figure 1: User Quotes from CampusWorks Discovery Interviews

With a higher student to staff ratio (27:1) than any Colorado peer, MSU Denver must reimagine the way we work to address ongoing inefficiencies which divert staff attention and resources away from our core objective: educating Coloradans.

With these challenges in mind, in mid-2019 MSU Denver engaged CampusWorks, Inc, an independent consulting organization specializing in higher education services, to perform a comprehensive assessment of MSU Denver's ERP/SIS environment and recommend a path forward for the organization.

CampusWorks visited MSU Denver in late 2019, meeting with over 120 students, faculty, and staff to gather information and opinions on the Ellucian Banner environment. Following their onsite visit, they solicited additional feedback via anonymous survey, and included that input in their final report.

The consultants' report, spanning nearly fifty pages, identified numerous opportunities for MSU Denver to innovate, but can be summed up by a single line: ***"The overall message is that the current state of Ellucian's Banner system is not meeting the needs of the institution."*** Roughly two-thirds of survey respondents favored replacing or re-implementing Banner.

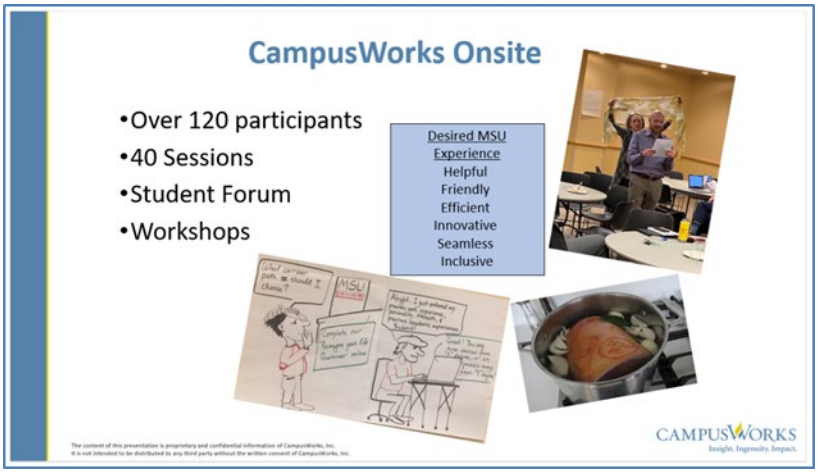


Figure 2: CampusWorks Onsite Visit

Such assertions can be jarring, but the MSU Denver community embraced this feedback, acknowledging that we owe it to our students, faculty, and staff to not let the digital world pass us by. Globally, MSU Denver is not alone in this position: recent research indicates that 32% of institutions anticipate a

strategic investment in SIS upgrades over the next eighteen months, with an additional 28% planning smaller upgrade initiatives.[2]

In that spirit, MSU Denver is requesting capital funds to implement a modern ERP/SIS solution, delivering gains in efficiency, usability, and satisfaction for the entire Roadrunner community.

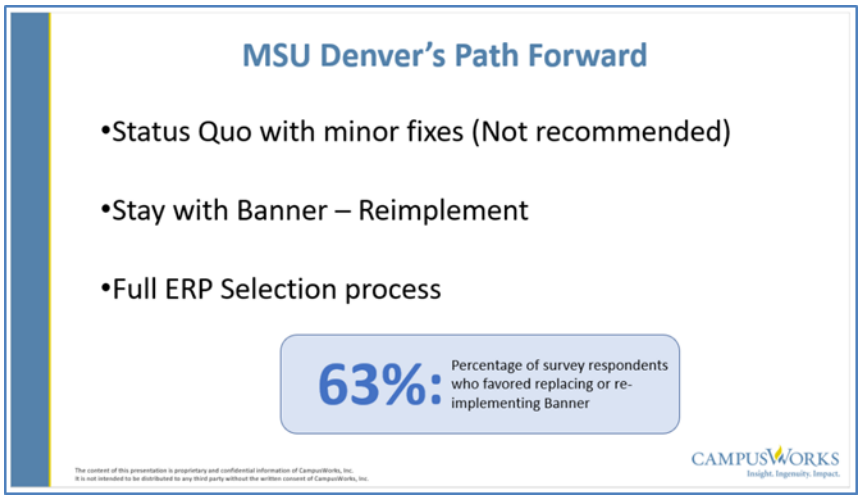


Figure 3: Slide from CampusWorks Findings Presentation, Feb 2020

Project Schedule

Having discussed the scope of this project with experts, vendors, and Colorado peers, MSU Denver proposes the following phased implementation approach. This schedule attempts to balance funding realities and personnel bandwidth against a need for innovation and modernization, and prioritizes a strong preparatory effort to maximize project success:

- **Phase I.** As noted earlier in this narrative, MSU Denver has made significant progress in this project phase in the preceding calendar year. Since initially outlining our plan in April 2020, we have:
    1. Selected a software solution for the Enterprise Resource Planning (HR/Finance) system.
    2. Aligned with several Colorado peers, collaborating to secure favorable pricing and terms based on a "consortium" negotiating position.
    3. Selected a consulting partner for the Workday Human Capital Management and Workday Financials implementation project.
    4. Established a draft project schedule.
    5. Selected a consulting partner to perform a technical and organizational readiness engagement for the Human Resources and Finance departments in advance of the January 2022 implementation kickoff.
    6. Selected a consulting partner to perform a process review/redesign engagement for the Office of Financial Aid, with an anticipated start date of June 2021.

[2] "ICT Enterprise Insights 2019-2020". InformaTech, PLC. https://www.omdia.com/solutions/data-services/ict-enterprise-insights-2019-20. Retrieved 19 May 2020.

While progress has been made, significant work remains to be done as part of this phase. Having focused heavily on the "foundational" systems that support the University's core business operations, we must now shift our planning attention to the Student Information System (SIS) platform. During the remainder of this phase, in addition to formally launching the ERP implementation project, we expect to:

1. Continue process review/reimagination efforts across multiple student service disciplines.
2. Perform system evaluations of viable SIS candidate solutions.
3. Develop a formal recommendation for the SIS "go forward" strategic direction.
4. Reinforce supporting processes, including updated data management protocols and strengthened data governance practices.

- **Phase II.** Having kicked off the Workday HCM/Finance implementation initiative during Phase I, much of Phase II will focus on completion of this critical system rollout, providing a strong foundation for the system and ensures that operational efficiencies borne from revised business processes and modern systems are realized as soon as possible. Pending the results of the SIS recommendation, initial planning and preparation for a student system reimplementation will likely begin during the second half of FY22-23 as well.

- **Phase III.** The third year of this effort will see finalized implementation of ERP functionality and the rollout of a revamped analytics platform, and the launch of Student Information System implementation efforts. SIS implementation, expected to take approximately 24 months to complete, will be the most complex piece of the project, and the most impactful for MSU Denver students.

- **Phase IV.** During this phase, SIS implementation will be completed, permitting MSU Denver students to register for classes, apply for and receive financial aid, and seek work study positions in a modern, cloud-based system. During this phase, we anticipate using the Year 4 funding to complete integrations in all deployed modules, and work to further configure native analytics tools in the reimplemented platform.

If funded, a modern enterprise system will provide a foundation for increased student success and innovation in business processes. The efficiencies gained by a streamlined system will allow existing staff to refocus on the student experience rather than manual processing or cumbersome practices that distract from the University's core mission.

Alignment with the Higher Education Master Plan

By funding this project, the CDHE will be investing in an institution whose mission encompasses the four strategic goals outlined in the Higher Education Master Plan[3] in impactful ways, including the following:

[3] "Executive Summary - Colorado Rises". Colorado Department of Education. http://masterplan.highered.colorado.gov/executive-summary/. Retrieved 7 August 2020.

Strategic Goal 1: Increase Credential Completion – This goal stresses the importance of increasing the number of Coloradans with postsecondary education, including credentials in high-demand areas such as STEM and teacher education.

- MSU Denver's website aptly describes how the University meets this strategic goal: "We empower Colorado's students to advance their lives and careers through high-quality, real-world education. And we power the state economy through our 95,000 work-ready graduates, more than 80% of whom stay in Colorado. Based in the heart of the Mile High City, MSU Denver provides unparalleled access to internships and professional networks that jump-start careers."[4]

Investing in this project will support this strategic goal and MSU Denver persistence and completion initiatives by simplifying the student digital experience, removing barriers to course registration, advising and academic planning tools, and consolidating these critical resources in a single system and view.

Strategic Goal 2: Erase Equity Gaps – The second strategic goal focuses on erasing the current equity gap experienced by Colorado's largest and fastest-growing ethnic group, Hispanic/Latino.

- Almost half (46%) of MSU Denver's undergraduates are students of color.[5]
- In February 2019, MSU Denver achieved Hispanic Service Institute (HSI) Designation with 5,469 enrolled Hispanic and Latino students, more than any other higher education institute in Colorado.[6]
- MSU Denver's Immigrant Services program provides academic and social support for undocumented, DACA, immigrant, and refugee students to increase enrollment, retention, and graduation.[7]
- Diversity is one of MSU Denver's core values. As such, the University strives to create an inclusive community of learners and has established policies, practices, programs, and resources designed to embrace and support diversity.[8]

In pursuing this project, MSU Denver seeks to better serve the faculty and staff who deliver the above services by providing a modern, flexible, and easy to use information system. Newer cloud-based systems boast improved language customization options to offer features in native languages, as well as improved accessibility features that expand access to groups beyond ethnic divisions.

Strategic Goal 3: Improve Student Success – The third strategic goal supports innovative approaches for improving students' timely education completion.

- MSU Denver's Roadways program promotes student persistence, retention, and graduation by providing comprehensive, individualized support services designed to guide students throughout their entire educational experience.[9]

[4] "About MSU Denver". MSU Denver. https://www.msudenver.edu/about/. Retrieved 7 August 2020.
[5] "About MSU Denver". MSU Denver. https://www.msudenver.edu/about/. Retrieved 7 August 2020.
[6] "Hispanic-Serving Institution". MSU Denver. https://www.msudenver.edu/hispanic-serving-institution/. Retrieved 7 August 2020.
[7] "Immigrant Services". MSU Denver. https://www.msudenver.edu/immigrant-services/. Retrieved 10 August 2020.
[8] "Office of Diversity and Inclusion". MSU Denver. https://www.msudenver.edu/diversity/. Retrieved 7 August 2020.
[9] "Roadways". MSU Denver. https://www.msudenver.edu/roadways/. Retrieved 7 August 2020.

- The University's Innovative & Lifelong Learning programs provide flexible courses to current University students, help prepare high school students for college through concurrent and dual enrollment programs, and offer certifications and training opportunities to upskill the metro area workforce.[10]
- U.S News and World Report ranked MSU Denver the #5 most innovative university in the West in 2020.[11]

As an innovative institution, MSU Denver must continue to take the lead in pursuing advanced technology solutions to solve today's and tomorrow's challenges. Deploying an updated student information system will support student success by improving the digital tools available to students as they plan their degree path, simplify transactions such as registration and tuition payment, and make resources available to students, advisors, and support staff that drastically reduces barriers to success and frustrating interactions between students and their objectives.

Strategic Goal 4: Invest in Affordability and Innovation –The fourth goal describes the commitment to maintain affordability through increased state investment in postsecondary education.

- MSU Denver's per FTE allocation remains below the average among Colorado peers and stands among the lowest in the state.
- The University is required to be accessible to all, which is why it consistently has the lowest tuition of four-year Colorado colleges and universities.[12]

Investing in MSU Denver by funding this project would support the Colorado Commission on Higher Education's "urgent call to action" – "If the state of Colorado is to prepare its students for changing workforce demands and maintain its high quality of life and vibrant economy, it must invest more in the educational attainment of all its citizens."[13] As illustrated in Section G below, pursuing this project yields a positive return on investment, ensuring that MSU Denver can allocate more of our resources where they belong – educating Coloradans, rather than supporting an aging infrastructure.

D. PROGRAM INFORMATION:

Provide a description of the programs within the institution that will be impacted by this request.

Due to the nature of the systems involved in this proposal, the entire University community will be positively impacted by the project.

- Students of MSU Denver will enjoy access to a cloud-based, mobile-friendly system for course registration, student account processing, and financial aid application and disbursement. Depending upon the selected solution, this may also include advising systems and career counseling.

[10] "Innovative and Lifelong Learning". MSU Denver. https://www.msudenver.edu/innovative-lifelong-learning/. Retrieved 10 August 2020.
[11] "Metropolitan State University of Denver | US News Best Colleges". US News & World Report. https://www.usnews.com/best-colleges/metropolitan-state-university-of-denver-1360. Retrieved 10 August 2020.
[12] "Cost". MSU Denver. https://www.msudenver.edu/cost/. Retrieved 7 August 2020.
[13] "Executive Summary - Colorado Rises". Colorado Department of Education. http://masterplan.highered.colorado.gov/executive-summary/. Retrieved 7 August 2020.

- Faculty will leverage the system to submit student grades, review course rosters, and possibly administer grant awards.
- Staff will utilize modern interfaces to perform core business functions, admitting new students, awarding financial aid, processing payments, and recruiting and on-boarding talented faculty, staff and student employees.

E. CONSEQUENCES IF NOT FUNDED:

Provide a description of consequences if this project is not funded. See instructions for further detail.

The Ellucian Banner environment is presently hosted on-premise at MSU Denver, requiring significant infrastructure to maintain (at present count, approximately fifty virtual servers and half a dozen enterprise databases, multiple terabytes of enterprise-grade storage, load balancers, and a robust server backup infrastructure), within an onsite data center that has been equipped with redundant power sources, battery backups, cooling systems and extensive physical security features. As more and more University systems move to the cloud, Banner becomes the main consumer of these resources, which must be regularly maintained and replaced.

Additionally, recruiting skilled labor to support the Ellucian Banner platform is challenging; in the past three years, MSU Denver has failed six searches to fill open positions for Banner Developer and Banner Administrator roles, leading to an increased reliance on contracted labor at a higher annual cost than in-house resources. As the solution continues to age, this challenge will only increase.

While these direct costs are significant, the ongoing impact of the incumbent systems' inefficiencies dwarf the hard costs documented above. In its current state, users of the Banner environment rely on a patchwork of manual steps and workarounds to complete their daily work, introducing delays and creating a broad reliance on tribal knowledge. In an effort to mitigate these challenges, custom code has been applied throughout the system; in simplifying the end user experience, these customizations have made ongoing administration of an already complex environment even more onerous.

If this project is not funded, MSU Denver will continue to suffer the consequences described above – the Banner environment is outdated and requires significant attention and time to maintain; labor skilled in Banner development and administration is increasingly difficult to recruit and hire; current inefficiencies in business processes waste time and money throughout the institution – leaving the university in a high-risk position which increases each year. Conversely, providing the funding to implement a reliable, flexible, secure, cloud-based ERP/SIS solution would save money and cultivate a more positive digital experience for the entire University community.

F. ASSUMPTIONS FOR CALCULATIONS:

Describe the basis for how the project costs were estimated. Include inflation assumptions. See instructions for further detail.

As part of the ERP Assessment engagement, MSU Denver requested that CampusWorks provide estimated solution and implementation costs for the top three candidate solutions. For the purposes of this proposal, MSU Denver has used the average estimated software costs, plus 5% variance, and the maximum estimated implementation costs, plus 10% variance. As the costs estimated below assume a five-year total subscription, inflation values are included within the average noted below.

ESTIMATED COSTS FOR ERP SOLUTION				
	A	B	C	Average Cost (plus 5%)
5-year Subscription	11,088,728.60	13,503,901.74	14,009,269.99	13,510,665.11
Average per year	$2,217,745.72	$2,700,780.35	$2,801,854.00	$2,702,133.02
Implementation Cost	2,337,555.39	9,560,045.92	9,357,512.95	7,793,541.90

Figure 4: Estimated ERP Costs per CampusWorks. Software and Implementation Costs used are highlighted in red.

G. OPERATING BUDGET IMPACT:

Detail operating budget impacts the project may have. See instructions for further detail.

Including licensing for the core platform, supporting applications, select third-party ancillary products, ongoing infrastructure expenses, consulting costs, and staffing costs related to operating the current solution, we arrive at an annual operating cost of $2,983,000 per year to maintain the incumbent, on-premise solution.

Per the consultants' recommendation, we anticipate spending additional funds in the upcoming fiscal year to review, refine, and implement new business processes, data management practices and an updated data governance framework. With that in mind, we have projected additional expenses in Year 1 of the current solution's ten-year cost model.

By comparison, following the initial implementation, the annual cost of the proposed alternative solution – which would eliminate much of the internal overhead expenses – is projected at $2,702,133 per year. Over a ten-year period (and assuming a 4% annual cost increase per solution), this would result in measurable (9.2%) projected savings relative to current annual expenditures, inclusive of the upfront implementation costs described in this proposal.

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	10 Yr TCO
Current Solution	$4,483,000	$2,983,000	$3,102,320	$3,226,413	$3,355,469	$3,489,688	$3,629,276	$3,774,447	$3,925,424	$4,082,441	$36,051,478
Proposed Alternative	$1,500,000	$3,685,000	$5,060,000	$5,170,000	$2,702,133	$2,810,218	$2,922,627	$3,039,532	$3,161,113	$3,287,558	$33,338,182
Net TCO	-	$ 702,000	$ 1,957,680	$ 1,943,587	$ (653,336)	$ (679,470)	$ (706,649)	$ (734,914)	$ (764,311)	$ (794,884)	$ (2,713,297)

In addition, addressing current inefficiencies in our business processes would provide cost avoidance and savings throughout the institution. Optimizing and automating these processes would allow individual departments to better leverage their existing staff, providing a much higher level of service to the university community without needing additional FTE.

A recent project in our Admissions office provides an example of reimagining our business processes and the efficiencies that can be realized. In a collaborative effort across multiple departments, MSU Denver completely redesigned and automated the way we accept applications, make admissions decisions and admit students to the university. The efficiencies gained through this project were realized during the 2019 Colorado free application day when we received almost 4,000 student

applications. Processing that many applications with our old design would have taken three to four months and required approximately 5 temporary staff. By comparison, our redesigned processes allowed us to **complete every application in two weeks and without any additional staff.**

H. PROJECT SCHEDULE:

Identify project schedule by funding phases. Add or delete boxes as required for each phase. See instructions for further detail.

Phase 1 of 4	**Start Date**	**Completion Date**
Pre-Design	**7/1/2020**	**10/1/2020**
Design	**10/2/2020**	**12/31/2021**
Implementation	**1/1/2022**	**6/30/2022**

Phase 2 of 4	**Start Date**	**Completion Date**
Implementation	**7/1/2022**	**6/30/2023**

Phase 3 of 4	**Start Date**	**Completion Date**
Implementation	**7/1/2023**	**6/30/2024**

Phase 4 of 4	**Start Date**	**Completion Date**
Implementation	**7/1/2024**	**6/30/2025**

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	Yes
Request 6-month encumbrance waiver:	No
Is this a continuation of a project appropriated in a prior year:	Yes
State Controller Project Number (if continuation):	TBD

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

Describe the cost savings or improved performance outcomes as a result of this project. Please clearly identify and quantify anticipated administrative and operating efficiencies or program enhancements and service expansion through cost-benefit analyses and return on investment calculations.

As outlined in Section G, this project will yield measurable savings in operating costs over a ten-year period, compounded by gains in drastically increased efficiency for all student-facing and administrative departments, which currently rely on cumbersome ERP/SIS solutions for critical business functions. MSU Denver Information Technology Services (ITS) estimates that, due to existing systemic inefficiencies, the University would require a minimum of 25 additional staff members, distributed through ITS, HR, Accounting, and Student Service functions, to deliver the same gains in student service and administrative productivity as would be realized by this revitalization initiative.

With this in mind, the net result of this project, budgetarily, would be an 8.4% decrease in long term operating costs related to this service and over $16.5 million[14] in future cost avoidance. Projected over a ten-year period, the combined cost savings and cost avoidance exceed $19.2 million – roughly 37% of the current projected investment in the status quo over that same period.

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	10 Yr TCO
Current Solution	$4,483,000	$2,983,000	$3,102,320	$3,226,413	$3,355,469	$3,489,688	$3,629,276	$3,774,447	$3,925,424	$4,082,441	$36,051,478
Staff Needs W/O Change	-	$1,625,000	$1,673,750	$1,723,963	$1,775,681	$1,828,952	$1,883,820	$1,940,335	$1,998,545	$2,058,501	$16,508,547
Proposed Alternative	$1,500,000	$3,685,000	$5,060,000	$5,170,000	$2,702,133	$2,810,218	$2,922,627	$3,039,532	$3,161,113	$3,287,558	$33,338,182
Net TCO	-	$ (923,000)	$ 283,930	$ 219,625	$ (2,429,018)	$ (2,508,422)	$ (2,590,469)	$ (2,675,249)	$ (2,762,856)	$ (2,853,385)	**$ (19,221,844)**

During the initial project research, MSU Denver also identified over twenty third-party applications which are used today and may be eliminated if a modern system is deployed. This alone will yield significant efficiencies for staff members who today must bounce between disparate interfaces to complete their work; the operating costs of these systems have not yet been included in projected savings pending further investigation but would contribute to further annual savings.

Key performance indicators of cost savings or improved performance outcomes as a result of this project include:

- Decreased operating costs over a 10-year period
- Decreased reported time on task for completing core business processes
- Decreased ERP/SIS system downtime for maintenance
- Increased student and employee satisfaction with the digital experience at MSU Denver

K. SECURITY AND BACKUP / DISASTER RECOVERY:

Describe the data protection and disaster recovery considerations factored into the plan. Indicate any cybersecurity implications if applicable.

While MSU Denver boasts a robust information security program and backup strategy today, migration to a cloud provider would offer increased resiliency. Reasons for this include:

As the present ERP/SIS is hosted on-premise, it is dependent upon campus network services; if internet access to the Auraria Campus is disrupted, access to the ERP/SIS is interrupted as well. This can be particularly impactful during periods of high demand, such as class registration dates, grade submission deadlines, or financial aid disbursement windows. By contrast, a cloud provider would offer a geographically distributed, fully redundant infrastructure, delivering a level of availability that would be impractical to replicate on campus.

[14] For these calculations, an average per-employee annual salary of $50,000, plus 30% fringe costs and a 3% annual increase has been assumed.

Each of the three candidate providers have documented alignment with the ISO 27000 Family of Standards and regular completion of Service Organization Controls Type 1 and 2 reports. This level of rigor indicates a prioritization of reliability and availability from any of the candidates.

A move to a modern solution will offer enhanced data encryption protocols that exceed the current security capabilities of MSU Denver's on-premise solution.

One consideration to be aware of is that, were MSU Denver to shift to a fully cloud-based solution, University data, including Personally Identifiable Information, FERPA, HIPAA, and PCI-regulated information, would be stored outside the University's firewall. While this may represent a risk, the University does feel that this would be acceptable provided the selected solution demonstrates adequate cybersecurity practices.

L. BUSINESS PROCESS ANALYSIS:

Describe alternatives analyzed, cost-benefit analysis, and measures in place to prevent time and cost overruns. Articulate how the proposed project fits in with the institution's strategic IT plan.

Alternative Paths Considered

As noted above in Section C, MSU Denver began this journey by soliciting an external, independent assessment of current posture and potential paths forward. The consulting team presented three potential paths:

1. Status quo with minor adjustments (not recommended)
2. Reimplementation of Ellucian Banner
3. Selection and Implementation of new ERP/SIS

The consultants' report outlined pros and cons for three candidate solutions, encompassing bullets 2 and 3 above. In Phase I of this proposed project, MSU Denver would formally select a vendor and proceed accordingly.

Managing the Change

Guiding a large, diverse organization through a change of this magnitude is never simple, and doing so will require thoughtful, engaged management, inclusive leadership, and strong institutional support.

To that end:

- MSU Denver intends to charter a cross-functional Steering Committee for this project, ensuring that all constituent voices are heard and included in the planning and implementation phases. This Steering Committee would report through pre-existing Technology Governance committees and persist throughout the project lifecycle.
- MSU Denver ITS has already initiated significant organizational adjustments in preparation for a project of this scale, including the formal creation of a dedicated Business Analysis team, augmentation of existing Software Project Management resources, and ongoing revision of internal project and portfolio management practices.
- To prevent time and cost overruns, ITS has hired experienced project management resources to support the effort and ensure that adequate attention is given to the effort throughout the organization. These consulting project management resources are included in our cost estimate.

Strategic Alignment

MSU Denver recently published Strategic Plan 2030[15], articulating the University's focus and direction for the coming decade. The Plan highlights Five core Pillars:

1. Student Access, Service and Achievement
2. Student-Centered Academic Excellence
3. Civic and Economic Catalyst
4. Diversity, Equity and Inclusion
5. Organizational Ability and Sustainability

This project has the opportunity to positively impact all of these pillars by providing an improved student experience, by reducing barriers to academic success, by enhancing our DEI efforts through streamlined analytics, and by providing a stable, scalable, reliable system that supports all University operations.

The Administration and Finance Branch, to which ITS belongs, describes its mission as "*To build the stage on which our students, faculty and staff can shine*." In some cases, this manifests itself literally, as the Facilities team delivers new learning spaces and renovates old buildings. It can manifest figuratively, with Human Resources building a strong base of faculty and staff talent, or Accounting Services providing a robust and thoughtful budget framework for other departments to plan against. For ITS, it means that the team delivers solutions that the rest of the University can rely upon to enroll in classes, build processes, and do their work as efficiently as possible.

ITS embraces a "cloud first" strategy when evaluating and selecting new solutions and seeks transformative opportunities throughout campus – situations where the right technology can be applied to deliver massive results. This project, if funded, would fit that mold. MSU Denver looks forward to the opportunity to further discuss this proposal with State leaders and hopes to proceed with a plan to Reimagine the Campus Digital Experience, benefitting MSU Denver's students and, by proxy, tens of thousands of Coloradans.

[15] https://www.msudenver.edu/strategic-plan-2030/

Network Infrastructure Modernization

- Metropolitan State University -

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 5/24/2021

CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**Cash & CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Metropolitan State University of Denver	(2) **Name & Title of Preparer:**	Kevin Taylor, CIO and AVP for Information Technology Services
(C)	(1) **Project Title:**	Network Infrastructure Moderni	(2) **E-mail of Preparer:**	ktaylo79@msudenver.edu
(D)	(1) **Project Phase (__ of __):**	2 of 3	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (CC or CR):**	CC	(2) **Institution Signature Approval:**	05/24/21
(F)	(1) **Year First Requested:**	FY 2021-2022	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	2 of 2	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ 250,000	$ 250,000	$ -	.		$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ 25,000	$ 25,000	$ -	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 275,000	$ 275,000	$ -	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	**$ -**	**$ -**	$ -	**$ -**	**$ -**	**$ -**	**$ -**
	Equipment							
(28)	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ 3,060,000	$ 1,150,000	**$ 935,000**	$ 975,000	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ 3,060,000	$ 1,150,000	$ 935,000	$ 975,000	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	**$ 3,335,000**	**$ 1,425,000**	$ 935,000	**$ 975,000**	**$ -**	**$ -**	**$ -**
	Project Contingency							
(36)	5% for New	$ 175,000	$ 75,000	**$ 50,000**	$ 50,000	$ -	$ -	$ -
(37)	10% for Renovation	$ -		$ -	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 175,000	$ 75,000	$ 50,000	$ 50,000	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	**$ 3,510,000**	**$ 1,500,000**	$ 985,000	**$ 1,025,000**	**$ -**	**$ -**	**$ -**
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 2,795,000	$ 1,250,000	**$ 795,000**	$ 750,000	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 750,000	$ 250,000	**$ 250,000**	$ 250,000	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	**3,545,000**	**1,500,000**	**1,045,000**	**1,000,000**	**-**	**-**	**-**

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2022-23 CAPITAL CONSTRUCTION/CAPITAL RENEWAL PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**1,045,000**	
Cash Fund Amount (CF):	250,000	
Funding Type:	State Funded	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Metropolitan State University of Denver	
Project Title:	Network Infrastructure Modernization	
Project Phase (Phase _of_):	2 of 3	
State Controller Project Number (if continuation):	N/A	
Project Type:	X	Technology Hardware
		Technology Software
Year First Requested:	FY 2020 -21	
Priority Number (Leave blank for continuation projects):		
Name & Title of Preparer:	Kevin Taylor, CIO and AVP for Information Technology Services	
E-mail of Preparer:	Ktaylo79@msudenver.edu	
Institution Signature Approval:		05/24/21
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

This three-phase project upgrades network infrastructure, replacing aging wired and wireless network equipment and adding redundant fiber paths between buildings. In addition to providing a more stable and reliable foundation for our enterprise networks, updating to a modern network platform will provide greater monitoring capabilities and security measures for increased cyber security.

MSU Denver originally requested funding for this project fiscal year 2020-21. This project allows MSU Denver to deploy a modern, secure and reliable network infrastructure that will improve the student experience and effectively support 21st century Colorado learners and the dedicated faculty and staff who make that learning possible.

We thank the committee for its ongoing support of our mission and commitment to educating Coloradans, and for the recommendation to fund the first year of our project request in in fiscal year 2021-22 in the amount of $1,500,000.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$2,795,000	$1,250,000	**$795,000**	$750,000	$0	$0	$0
Cash Funds (CF)	$750,000	$250,000	**$250,000**	$250,000	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$3,545,000**	**$1,500,000**	**$1,045,000**	**$1,000,000**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

Metropolitan State University of Denver (MSU Denver) is requesting state funds for the second phase of a three-phase project to modernize our network infrastructure and address deferred maintenance. This project will fund the replacement of approximately 300 edge and distribution layer switches, 450 wireless access points, and provide additional network paths between campus buildings. These improvements would provide a more robust and stable network environment capable of supporting the university's evolving needs in a scalable and secure manner.

With the approval of Phase I funding MSU will begin this project with a final, consultant-supported design review in the Fall 2021 semester. The first phase of the project includes the completion of MSU's campus fiber optic network loop and the first phase of key network infrastructure upgrades in buildings that house classrooms and student services.

Phase II funding will include:

- Replacement of approximately 150 edge switches
- Replacement of approximately 170 wireless access points

Phase III funding will include:

- Replacement of approximately 130 edge switches
- Replacement of approximately 280 wireless access points

D. PROGRAM INFORMATION:

All MSU Denver students, faculty and staff would benefit from this modernization project. The university's network infrastructure provides all network and telephony services, which in turn support the business of the university and all student-facing services, including admissions, registration, academic advising, financial aid, and MSU Denver's online education programs. These services support the recruitment, retention and academic success of our students.

Additionally, the fiber optic infrastructure completes a campus network loop between institutions on the Auraria Campus. This loop would create diverse network paths with redundant connections for MSU Denver and provide additional fiber capacity that could be used by other Auraria institutions in the event of an unintended fiber cut or other line-specific disruption of service.

E. CONSEQUENCES IF NOT FUNDED:

This project would address deferred maintenance in MSU Denver's wired and wireless network infrastructure. It would also address single points of failure in our network by adding redundant fiber connections between buildings.

Failure to fund this project would increase the likelihood of equipment failure as our equipment continues to age and would not address the single points of failure in our network infrastructure. Both of these could result in unintended network outages and loss of critical business and academic services for our students, faculty and staff.

F. ASSUMPTIONS FOR CALCULATIONS:

Estimated switch and wireless access point costs are based on the number of devices and the average cost per device. Estimated installation and cabling costs, including fiber optic installation, are based on existing designs and conduit paths.

G. OPERATING BUDGET IMPACT:

MSU Denver anticipates the reallocation of current IT operating budget to sustain improvements realized by this project.

H. PROJECT SCHEDULE:

Phase _1_of_3_	Start Date	Completion Date
Pre-Design	7/1/2021	8/14/2021
Design	8/10/2021	9/11/2021
Construction	9/14/2021	6/30/2022

Phase _2_of_3_	Start Date	Completion Date
Construction	7/1/2022	6/30/2023

Phase _3_of_3_	Start Date	Completion Date
Construction	7/1/2023	6/30/2024

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	Yes
Request 6-month encumbrance waiver:	No
Is this a continuation of a project appropriated in a prior year:	No
State Controller Project Number (if continuation):	

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

Replacement of aging equipment and addressing single points of failure are risk mitigation strategies to avoid unintended network outages. These outages would result in loss of critical business and educational services for our students, faculty and staff.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

This project would add diverse network paths for all MSU Denver buildings, adding resiliency to campus networking infrastructure by completing the campus fiber ring. This ring would also provide our tri-institutional partners - the University of Colorado Denver, the Community College of Denver, and the Auraria Higher Education Center – the ability to utilize MSU Denver installed conduit to add secondary fiber links and increase the resiliency of their networks as needed.

In addition, this project would provide modern network equipment capable of supporting modern security architecture and best practices. New network innovations such as Dynamic Segmentation, Role Based Access, Dynamic Role Assignment, Device fingerprinting, and Micro Segmentation are all features found in new switching products. These advanced features would enable MSU Denver to provide a reliable, scalable, and secure network capable of supporting the ever-increasing number of wireless devices on campus.

L. BUSINESS PROCESS ANALYSIS:

As an infrastructure-focused initiative, this project proposal is designed to ensure ongoing availability of all MSU Denver academic and business services which rely on IT systems to succeed.

Replacement of campus networking equipment has been recognized as a need, but to date, competing priorities have superseded a concerted infrastructure modernization effort. As a result, much of the university's network equipment has exceeded its anticipated lifespan – in some cases, dramatically so.

MSU Denver's Information Technology Services (ITS) recommends a five year lifecycle for network infrastructure, which aligns with many industry recommendations. However, the equipment deployed on campus today carries a median age of 6.5 years, with 80% of production network switches exceeding five years in service, 42% exceeding seven years, and ten devices exceeding ten years of operation. Devices purchased prior to 2008 run an outdated version of the Cisco operating system software which has not received security or feature updates since early 2013.

With these considerations in mind, ITS performed an analysis of the current environment, including multiple internal meetings and work sessions, as well as consultation with several external, independent vendors. From these efforts, the proposed phases were generated and appropriate levels of consulting support – intended to supplement staff time and ensure project success – were identified. By pursuing the phases as specified, MSU Denver will be able to leverage greater purchasing power and minimize additional workload for procurement team members while simultaneously delivering the maximum benefit to the campus community on a compressed timeline.

Given the pace of change in network equipment, architecture and capabilities, if the project is funded MSU Denver intends to begin the project with a final, consultant-supported design review to ensure that the proposed architecture and specified equipment remain best-of-breed and will provide the maximum return on investment for the University.

Another important aspect of this project is the addition of fiber optic cabling infrastructure on the Auraria Campus. This proposal includes the implementation of additional network links to complete a campus fiber ring, improving resiliency for core campus facilities. At present, a single fiber optic link provides network, telephony and emergency calling services for numerous campus buildings. In the event of an unexpected service interruption on this link, one or more buildings may be disconnected from the campus network for

an extended period of time. Completing the ring would offer redundancy for those buildings in the event of a major service disruption.

Classroom ad Conference Room Technology

- Community College of Denver -

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 5/19/2021

FY22-23 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) Funding Type (Cash, CCF, Cash & CCF):	Cash and CCF	(2) Intercept Program Request? (Yes/No):	No
(B)	(1) Institution:	Community College of Denver	(2) Name & Title of Preparer:	Chris Arcarese, Director of IT
(C)	(1) Project Title:	Classroom and Conference Room Technology	(2) E-mail of Preparer:	chris.arcarese@ccd.edu
(D)	(1) Project Phase (__ of __):	Phase 2 of 3	(2) State Controller Project # (if continuation):	
(E)	(1) Project Type (IT):	Capital IT	(2) Institution Signature Approval:	Date
(F)	(1) Year First Requested:	FY 2019-20	(2) CDHE Signature Approval:	Date
(G)	(1) Priority Number (Leave blank for continuation projects):	_____ of _____ (continuation project)	(2) OSPB Signature Approval	Date

(1)		(a) Total Project Costs	(b) Total Prior Year Appropriation(s)	(c) Current Budget Year Request	(d) Year Two Request	(e) Year Three Request	(f) Year Four Request	(g) Year Five Request
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ 335,634	$ 133,674	$ 97,920	$ 104,040	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ 16,782	$ 6,684	$ 4,896	$ 5,202	$ -	$ -	$ -
(12)	Inflation Percentage Applied		5.00%	5.00%	5.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 352,416	$ 140,358	$ 102,816	$ 109,242	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Equipment							
(28)	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(32)	Other (Specify) AV Equipment	$ 4,253,469	$ 1,406,229	$ 1,380,480	$ 1,466,760	$ -	$ -	$ -
(33)	Miscellaneous	$ 212,673	$ 70,311	$ 69,024	$ 73,338	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ 4,466,142	$ 1,476,540	$ 1,449,504	$ 1,540,098	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	$ 4,818,558	$ 1,616,898	$ 1,552,320	$ 1,649,340	$ -	$ -	$ -
	Project Contingency							
(36)	5% for New	$ 240,928	$ 80,845	$ 77,616	$ 82,467	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 240,928	$ 80,845	$ 77,616	$ 82,467	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	$ 5,059,486	$ 1,697,743	$ 1,629,936	$ 1,731,807	$ -	$ -	$ -
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 4,755,917	$ 1,595,878	$ 1,532,140	$ 1,627,899	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 303,569	$ 101,865	$ 97,796	$ 103,908	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	5,059,486	1,697,743	1,629,936	1,731,807	-	-	-

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2021-22 CAPITAL CONSTRUCTION/CAPITAL RENEWAL PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$1,532,140 (Phase 2 of 3)**	
Cash Fund Amount (CF):	$97,796 (Phase 2 of 3)	
Funding Type:	Capital IT	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Community College of Denver	
Project Title:	Classroom and Conference Room Technology	
Project Phase (Phase _of_):	Phase 2 of 3	
State Controller Project Number (if continuation):	N/A	
Project Type:	✓	Technology Hardware
		Technology Software
Year First Requested:	FY 2019 -2020	
Priority Number (Leave blank for continuation projects):	1 of 1	
Name & Title of Preparer:	Chris Arcarese, IT Director	
E-mail of Preparer:	Chris.arcarese@ccd.edu	
Institution Signature Approval:	Kathryn R. Kaoudis, VP Admin Services/CFO Kathryn R Kaoudis	Date
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

Community College of Denver (CCD) is requesting $5,059,486 to replace, update, and standardize the College's classroom technology and conference room technology. CCD is grateful to the legislature the first year of this three year, phased project was funded in the FY21-23 long bill. This year, CCD requests funding for phase 2. We will implement the full project in phases over 3 years. The project will enable innovation in teaching, standardize teaching and conferencing technology, and refresh outdated equipment. In the words of students "the projectors are super old and half the time don't work." Critically important now, it will create stable platform for flexible remote learning and hybrid learning capabilities to prepare for unanticipated campus closures and allow students opportunities to continue learning when physical presence in the classroom isn't possible.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$4,755,917	$1,595,878	**$1,532,140**	$1,627,899	$0	$0	$0
Cash Funds (CF)	$303,569	$101,865	**$97,796**	$103,908	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$5,059,486**	**$1,697,743**	**$1,629,936**	**$1,731,807**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

The Community College of Denver (CCD) is faced with aging and inadequate classroom and conference room technology while trying to meet changing needs of our students, faculty, and staff. Many of our faculty are already working to innovate in our classrooms and meeting significant barriers because of aging classroom technology offerings. The Classroom and Conference Room Technology project will replace and/or upgrade a majority of equipment in our 170 classrooms across 3 campuses. The project will include classroom projection, collaboration, audio and switching equipment. The increased capabilities will create a stable platform that will allow students to continue learning when not on campus, whether due to unanticipated campus closure, student school/work schedule conflicts, or other reasons. The equipment will include distance learning technology, wireless projection, instruction capture, digital whiteboards, and "BYOD" (bring your own device) connectivity to facilitate exchange of information in the classrooms and across the Internet.

This project directly impacts aspects of 4 goals in the 2017 CDHE Master Plan (Colorado Rises). CCD is strategically positioned to address these goals. This project will help CCD in efforts to address credential completion, student success, affordability and innovation, and the equity gaps in higher education. The project will address aspects of these concerns because it is in direct support of active learning in classrooms and providing continued instruction when students are learning remotely.

The Educause Learning Initiative (ELI) wrote about why emerging technologies are significant for teaching and learning spaces in "7 Things You Should Know About Emerging Classroom Technologies" in April 2018.

> *"Emerging technologies for teaching and learning spaces are significant in three broad ways. First, they nurture further movement away from a "sage on the stage" model to one of collaboration and deeper student engagement in learning. Software that converts writing on whiteboards to digital form, for example, encourages learners to be co-creators of content and enables better interaction in group work. Second, they facilitate new, more vivid learning experiences, such as those that can be created using AR and VR and that enable students to experience places they could not otherwise visit. Third, their potential to improve cognition and engagement can enhance learning."*

Areas of impact for this project:

- *Simplify classroom technology and increase reliability to reduce loss of instruction time.*
- *Enable innovation or use of new technology to better reach students and increase student engagement.*
- *Implement universal design concepts that allow all students to have better access to classroom content.*
- *Allow more flexibility in learning space to increase opportunity for students to complete in a timely manner.*
- *Better support CCD STEM faculty that are pushing to use new technology in classrooms.*
- *Increase distribution of technology to impact our workforce training and certification programs.*
- *Correct issues related to diminished brightness in projection.*
- *Enable distance learning capabilities.*

CCD completed a student and faculty survey asking for direct feedback about classroom technology. The survey was completed in May 2019 toward the end of the semester while these issues were fresh on their minds. We received 41 responses to the survey.

Student comments include: "whiteboards/dry erase markers are very hard to see especially when they dry out which is often or are not available which is more often. Perhaps SMART boards or digital Epson projectors where the dry erase marker is digital and brighter."; "Better, more reliable projectors"; "Some kind of screen sharing, Bluetooth audio sharing device so that in discussion classes, students [can participate]."; "overhead which displays paper on projection screen, add smart boards."; "I'd like it to be easier to sync with the teacher's own laptop/tablet – perhaps through a secure wireless interface rather than with a wired setup."; "I think smartboards would be a substantial benefit to my learning."; "more technological interactive programs."

Faculty comments include: "It takes over 45 minutes to get help in the evenings, and things break frequently. Some rooms – the table is in a weird place and you have to choose between using the technology, and having the students see you. We need remote controls for the technology."; "When I need to show something from a desktop, I have to stop showing from doc cam. 2 screens should be adequate."; "Setting up math classrooms with smartboards."; "Also, the lighting in some classrooms is not ideal for projection. (It's either ALL LIGHTS OFF to be able to see projection, or ALL LIGHTS ON and then the projections [are] barely visible. All classrooms should have multiple light switches with one for the front near the projection that can be turned off without turning off ALL the lights in the classroom, rendering it very dark.)"; "Classroom technology are processes, such as grades, content, announcements, etc. The missing piece is innovation, such as, student engagement software. Engagement software offers various activities, such as, project, questions, activities all related to student learning and engagement and a data analysis feature so faculty can track who is learning, and who may need extra help."; "Being able to project from the iPad pros if there is no suitable technology. Currently I have to use my own hdmi/rgb connector and cables. Means I can't walk round and interact with students."; "Having a hard time answering this, because my classroom routinely has issues."

D. PROGRAM INFORMATION:

This project will impact most academic and workforce programs across Community College of Denver. The project will replace, upgrade, and standardize technology across all classrooms and conference rooms. The positive impact will allow all faculty and part-time instructors to work with newer and more flexible technology. It will standardize connections making it easier to focus on instruction rather than how to get the technology to work. It will also allow additional capabilities to increase student engagement and outcomes across all 3 CCD campuses. This project has a direct impact on students and

faculty at CCD. Critically, this project will allow a stable platform a stable platform that will allow students to continue learning when not on campus, whether due to unanticipated campus closure, student school/work schedule conflicts, or other reasons. As over 70% of CCD students work at least part-time, the ability to capture lectures for later access by students addresses a serious equity issue.

E. CONSEQUENCES IF NOT FUNDED:

If not funded Community College of Denver will need to prioritize replacements as equipment fails. Most equipment is now 7 years or older and not standardized in most areas. The largest impact is increasing failure rate and diminished performance of classroom equipment which has a direct impact on student learning. Moreover, CCD will not be able to provide lecture capture capability to students who may not be able to be physically on campus at every class period, due to a variety of life circumstances. CCD will also need to prioritize areas of campus to begin replacements meaning that technology capabilities will likely differ more greatly among classrooms and campuses. This will continue to frustrate faculty and students.

F. ASSUMPTIONS FOR CALCULATIONS:

The project is based on technology vendor quotations for a standard solution in each area. We are assuming 5% inflation in each project year, due to the gap between the timing of the quote and the ability to receive state funds and start the project.

G. OPERATING BUDGET IMPACT:

There will be some operating budget impact related to Cisco support contracts as a result of purchase of new equipment. The support budget will be absorbed in the normal operations within the CCD IT Department.

H. PROJECT SCHEDULE:

Identify project schedule by funding phases. Add or delete boxes as required for each phase. See instructions for further detail.

Phase 1 of 3	**Start Date**	**Completion Date**
Design	**7.5.2021**	**7.30.2021**
Construction	**8.2.2021**	**12.17.2021**

Phase 2 of 3	**Start Date**	**Completion Date**
Construction	**7.5.2022**	**12.16.2022**

Phase 3 of 3	**Start Date**	**Completion Date**
Construction	**7.5.2023**	**12.15.2023**

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	❑ Yes	X No
Request 6-month encumbrance waiver:	❑ Yes	X No
Is this a continuation of a project appropriated in a prior year:	❑ Yes	X No

State Controller Project Number (if continuation):	N/A

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

This project impacts all academic programs at all campuses, in a 3-year time period. Because faculty will reduce the time spent working with differing technology in each classroom, less time will be spent setting up and more time in actual instruction. This should improve student performance and increase engagement, leading to increased student retention and completion.

In addition, this project will provide students the ability to review lectures recorded on campus from off-campus on their own schedule. This will allow the college to continue to meet student needs in the event of an unanticipated campus closure or to address individual student challenges caused by illness, work/school schedule conflicts, and other life issues.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

The classroom and conference room technology plans will take advantage of existing network infrastructure and security protocols.

L. BUSINESS PROCESS ANALYSIS:

Alternatives to the project considered are to provide similar capabilities by re-using existing equipment and replacing components of the classroom and conference room solutions. While these considerations would provide for a more cost efficient solution it does not account for the primary issues experienced by the end users. The current equipment is difficult to operate and is failing at a rate that is impacting student's instruction time. The existing equipment is not consistent across buildings or campuses and is causing loss of instruction time when frequent failures occur.

A project plan will be implemented to ensure adherence to the timeline and budget allocated. The CCD IT department was able to effectively complete on-time and within budget all major projects related to the network, backups and virtualization planned since 2015. The project also fits the CCD IT strategic plan because it additionally will standardize equipment across all campuses and simplify the design of classroom and conference room technology.

Re-envisioning Mines ERP and SIS

- Colorado School of Mines -

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 11/2/2021

CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**CCF and CF**	(2) **Intercept Program Request? (Yes/No):**	
(B)	(1) **Institution:**	Colorado School of Mines	(2) **Name & Title of Preparer:**	Monique Sendze, Chief Information Officer
(C)	(1) **Project Title:**	Re-envisioning Mines ERP and SIS for a	(2) **E-mail of Preparer:**	msendze@mines.edu
(D)	(1) **Project Phase (__ of __):**	1 of 4	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (CC or CR):**	IT	(2) **Institution Signature Approval:**	Date May 25 2020
(F)	(1) **Year First Requested:**	FY _2021-2022	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	__1___ of __1____	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ 10,000,000	$ -	**$ 911,000**	$ 2,543,000	$ 3,078,000	$ 3,468,000	$ -
(24)	Software Built	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	**$ 10,000,000**	**$ -**	**$ 911,000**	**$ 2,543,000**	**$ 3,078,000**	**$ 3,468,000**	**$ -**
	Equipment							
(28)	Servers	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	**$ 10,000,000**	**$ -**	**$ 911,000**	**$ 2,543,000**	**$ 3,078,000**	**$ 3,468,000**	**$ -**
	Project Contingency							
(36)	5% for New	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	**$ 10,000,000**	**$ -**	**$ 911,000**	**$ 2,543,000**	**$ 3,078,000**	**$ 3,468,000**	**$ -**
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 9,036,000	$ -	**$ 789,000**	$ 2,304,000	$ 2,790,000	$ 3,153,000	$ -
(41)	Cash Funds (CF)	$ 964,000	$ -	**$ 122,000**	$ 239,000	$ 288,000	$ 315,000	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	TOTAL	**10,000,000**	**-**	**911,000**	**2,543,000**	**3,078,000**	**3,468,000**	**-**

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2021-22 CAPITAL CONSTRUCTION/CAPITAL RENEWAL PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	$9,036,000	
Cash Fund Amount (CF):	$964,000	
Funding Type:		
Intercept Program Request? (Yes/No):	No	
Institution Name:	Colorado School of Mines	
Project Title:	Re-envisioning Mines ERP and SIS for a world class user experience.	
Project Phase (Phase _of_):	1 of 4	
State Controller Project Number (if continuation):		
Project Type:		Technology Hardware
	X	Technology Software
Year First Requested:	FY 2021 – 2022	
Priority Number (Leave blank for continuation projects):	1 of 1	
Name & Title of Preparer:	Monique Sendze, Chief Information Officer	
E-mail of Preparer:	msendze@mines.edu	
Institution Signature Approval:	 Date May 25, 2020	
OSPB Signature Approval:	Date	
CDHE Signature Approval:	Date	

A. PROJECT SUMMARY/STATUS:

Colorado School of Mines (Mines) would like to request state funding to assist in aligning our infrastructure to advance the institution and provide services that will enhance the current and future learning style of higher education. A more modern system will allow us to address the changing information technology landscape, enhance the student experience, and streamline university business processes. The Enterprise Resource Planning (ERP) and Student Information System (SIS) are fundamental to any university's campus operations.

Our current ERP system is not effective in the current technology landscape. Mines is dependent on its ERP and SIS for all key business operations, such as human capital management, finance, payroll, student information such as grades, attendance records, admissions information, and financial aid that are tracked through these platforms which are currently executed within a disparate application environment, rife with manual workarounds, duplicated efforts, and/or process bottlenecks. Mines leadership and stakeholders have identified the following gaps in the current ERP/SIS system:

- Need to reduce delays in decision making caused by inaccessibility of operational data.
- Need for cost reduction associated with operations.
- Need to improve interoperability across systems.
- Need for a more agile ERP environment.

To that end, Mines has engaged BerryDunn—an independent consulting firm experienced in higher education information technology—to conduct an objective ERP feasibility assessment. BerryDunn will work with Mines to understand our current ERP environment. Their work with us will include reviewing documentation and business processes, conducting an online survey, and holding virtual work sessions with Mines stakeholders. The survey and work sessions will enable Mines stakeholders to provide input during this process. The information gathered, along with BerryDunn's knowledge of the ERP vendor marketplace, will result in recommendations that Mines' leadership will consider in planning our best path forward.

After that review, Mines will work towards a multi-year project to re-envision and deploy modern software solutions to address the changing information technology landscape and enhance the student experience and streamline business processes. The result of this effort will be a premier, innovative, efficient, mobile-friendly digital ecosystem that will drive the success of our present-day and future students, faculty and staff.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$9,036,000	$0	$789,000	$2,304,000	$2,790,000	$3,153,000	$0
Cash Funds (CF)	$964,000	$0	$122,000	$239,000	$288,000	$315,000	
Reappropriated Funds (RF)	$0	$0	$0	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	$0	$0	$0	$0	$0
Total Funds (TF)	**$10,000,000**	$0	**$911,000**	**$2,543,000**	**$3,078,000**	**$3,468,000**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

Provide a detailed description of the project, phases, funding and any other information relevant to the project. Include information on best practices. Describe how the project fits in with the Higher Education Master Plan goals.

In 2005, Colorado School of Mines partnered with University of Northern Colorado and Colorado Community College System to implement a new ERP system, Ellucian Banner. This system has served the University as the primary ERP for managing our student, finance, financial aid, HR, Grants, payroll, and employee day to day business transactions. Over time and with the advancement of technology, our environment to provide the expected services has become inefficient to manage from the infrastructure to the business processes. Over the last 15 years, we have had to also implement third-party systems to compensate for the lack of functionality our current ERP systems provided.

The Mines@150 strategic plan is still moving forward, and the need to assess the effectiveness and continued direction of our ERP system, Ellucian Banner, is more important than ever. We must differentiate ourselves from the considerable competition and change in education style that we now face and will continue to be facing in the future. Our differentiation does not stop in the classroom; we must align our core technology infrastructure with who we are and where we are heading. Now is the time to look at what our future could be—whether we stay with Ellucian Banner or we move to a different platform. We owe it to Mines to see what the possibilities are.

The pandemic health crisis, COVID-19, has highlighted how significantly out of date our current ERP system is in our response effort. Our systems are not able to adapt to a changing environment. Looking to the future, our systems and environment must be nimble, agile and innovative. Our change readiness must be top-of-mind to ensure we are ready to respond to future challenges.

In an effort to support the Higher Education Master Plan and our strategic plan, Mines@150, we must align our infrastructure to advance the institution and provide services that will enhance the current and future learning style of higher education. A more modern system will allow us to address the changing information technology landscape, enhance the student experience, and streamline university business processes.

The higher education landscape is expecting an efficient, cloud-based system that provides a personalized user experience. A modern system will enable Mines to drive where we need to be with both academic and business processes and enable effective and efficient access to information. This will allow our most valued resources, faculty and staff, to focus on providing a premier educational experience for our students. In addition, this will help us address student success, research and innovation. To help us reach this goal, our scope of work will follow the best practice models below:

We are currently in the strategy and alignment phase of our project. We have partnered with an external firm, BerryDunn, to provide an assessment of our current ERP landscape and provide the strategic business case for the future. BerryDunn will provide the following:

- Review and assessment of business processes
- Gap analysis of current ERP system
- ERP market and financial analyses
- Migration impact and considerations
- Readiness of Mines stakeholders for a new ERP system
- Recommendation for a path forward

The implementation and execution stage of the process will occur after the BerryDunn assessment. The steps include.

- Define a selection roadmap
- Gather and analyze requirements
- Build and RFP
- Conduct detailed vendor evaluation
- Select a vendor

An ERP implementation can be a massive undertaking and needs to be broken down into phased rollouts to ensure project success and sustainability. Our plan is to start with low-risk, high-impact internal rollouts for best results. After the vendor selection, we will do a phased implementation approach by functional areas in this order; human resources, finance, grants management and student. We expect the implement to take about 26-36 months to complete the full implementation. This prioritization and order of functionality for rollout is based on the following factors:

- **Business process exposure.** We will begin with functions that are not student facing (e.g. core HCM, financial management) to protect students and from any initial technology or project missteps.
- **Degree of change impact.** To build stakeholder confidence in IT's ability to deliver, we will start with high-impact internal functions, so we can leverage initial success or lessons learned to proceed through the implementation and gradually build toward higher-impact services over time**.**
- **Ease of implementation.** Also, we are taking into consideration some "paths of least resistance" to achieve some quick wins with our stakeholders. This will help kick-start user adoption and maintain the buy-in of our stakeholders.
- **Urgency and necessity. The proposed order takes into c**onsideration any outlying factors that may affect our project rollout, such as application end of life or system integration dependencies.

D. PROGRAM INFORMATION:

Provide a description of the programs within the institution that will be impacted by this request.

This proposal, re-envisioning the ERP, impacts all faculty, staff and students at the Colorado School of Mines. The CFO stated that "we must differentiate ourselves from the considerable competition and change in education style that we face and will be facing. That differentiation does not stop in the classroom; we must align our core infrastructure with who we are and where we are heading".

- Mines students are in incredibly rigorous programs and providing cloud-based tools increases effectiveness and accessibility across a variety of devices for financial aid processes, course

registration, student account processing and may include advising systems and career counseling.

- Mines faculty will use the system to perform core administrative functions of their job such as submit student grades, review course rosters and administer grant awards.
- Staff will utilize modern interfaces to perform core business functions, admitting new students, awarding financial aid, processing payments, student success initiatives and recruiting and on-boarding talented faculty, staff and student employees.

E. CONSEQUENCES IF NOT FUNDED:

Provide a description of consequences if this project is not funded. See instructions for further detail.

Our current ERP technology landscape is outdated. The cost and risk of hosting on premise infrastructure is costly and cumbersome to maintain. Efforts to update business processes have stalled due to the cumbersome system. Third-party systems are difficult to integrate and adds cost to the overall infrastructure. Managing information between all the systems is difficult and takes away from making data informed decisions. Recruiting the talent to fulfill the roles to maintain our ERP system is an issue. Over the last five years, we have had a total of five open positions that have had multiple failed searches. We continue to have three open positions to date that we are unable to attract talent.

The technology landscape in higher education is changing. The workforce for managing systems is moving towards the more modern systems. The current students are accustomed to current technology from cell phones, purchasing of items, instant information and now their education.

The user experience is a key part of recruiting and retaining talent in higher education whether it is a student, faculty or staff. If we are not able to update and provide the necessary services to remain attractive to students, we will be able to fulfill our role and mission of educating students.

F. ASSUMPTIONS FOR CALCULATIONS:

Describe the basis for how the project costs were estimated. Include inflation assumptions. See instructions for further detail.

Mines has begun working with a third-party firm, BerryDunn, to conduct an ERP Assessment, the estimated costs below are based on preliminary market analyses. More accurate numbers will be available upon completion of the assessment. In addition, estimated average costs were also obtained from an ERP solution vendor that provided a demo during a recent Lunch and Learn event on campus.

Estimated Costs for ERP Solution

	Solution 1	Solution 2	Solution 3	Solution 4	Average Cost +5%
5-year subscription	4,158,000	5,064,000	5,250,000	8,000,000	5,898,900
Average per year	831,600	1,012,800	1,050,000	1,600,000	1,123,601

Implementation Cost	876,000	3,582,000	3,504,000	2,000,000	2,786,700

G. OPERATING BUDGET IMPACT:

Detail operating budget impacts the project may have. See instructions for further detail.

Our current annual operating costs of $3,500,000 includes the current on-premise ERP platform, staffing costs, licensing, ancillary systems, and infrastructure.

During the strategy, alignment, implementation and execution stages, additional costs are expected. When we align our infrastructure to be nimble, agile and innovative, the costs will shift from operational to a more innovative environment. Mines expects to reduce hardware costs as a result of migrating to a cloud-based platform. The Information and Technology Solution staff will be retooled and retrained with additional skills to help the campus utilize the technology in innovative ways creating an information rich environment. Data driven decisions will be agile and responsive our new reality.

Estimated costs of implementing alternative solutions are provided in Section F. More accurate information will be available upon completion of the ERP assessment.

H. PROJECT SCHEDULE:

Identify project schedule by funding phases. Add or delete boxes as required for each phase. See instructions for further detail.

We will have three phases in the project.

Strategy and Alignment	**Begin Date**	**End Date**
BerryDunn Assessment	May 11, 2020	July 13, 2020
Internal Assessment Review	July 13, 2020	September 15, 2020

Implementation and Execution	**Begin Date**	**End Date**
Define a Selection Roadmap	August 2020	January 2021
Gather and Analyze Requirements	August 2020	January 2021
Build the RFP	August 2020	January 2021
Conduct Detailed Vendor Evaluations	August 2020	January 2021
Finalize Vendor Selection	August 2020	January 2021

Implementation and Execution	**Begin Date**	**End Date**
Human Resources	January 2021	January 2022
Financials	January 2021	January 2022
Student	January 2022	January 2023

Governance and Optimization	**Begin Date**	**End Date**

Transition to Operations	January 2022	
Support and Maintenance	January 2022	
Process Optimization	January 2022	

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required	**Yes**
Request 6-month encumbrance waiver	No
Is this a continuation of a project appropriated in a prior year:	No
State Controller Project Number (if continuation):	N/A

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

Describe the cost savings or improved performance outcomes as a result of this project. Please clearly identify and quantify anticipated administrative and operating efficiencies or program enhancements and service expansion through cost-benefit analyses and return on investment calculations.

There are many improved performance outcomes that will result from implementing an agile and innovative ERP system at Mines. Technology will continue to be at the top of mind for everyone. Attracting and retaining our highly qualified students and staff is imperative for our role and mission. Creating a technology environment that is responsive to a crisis is imperative.

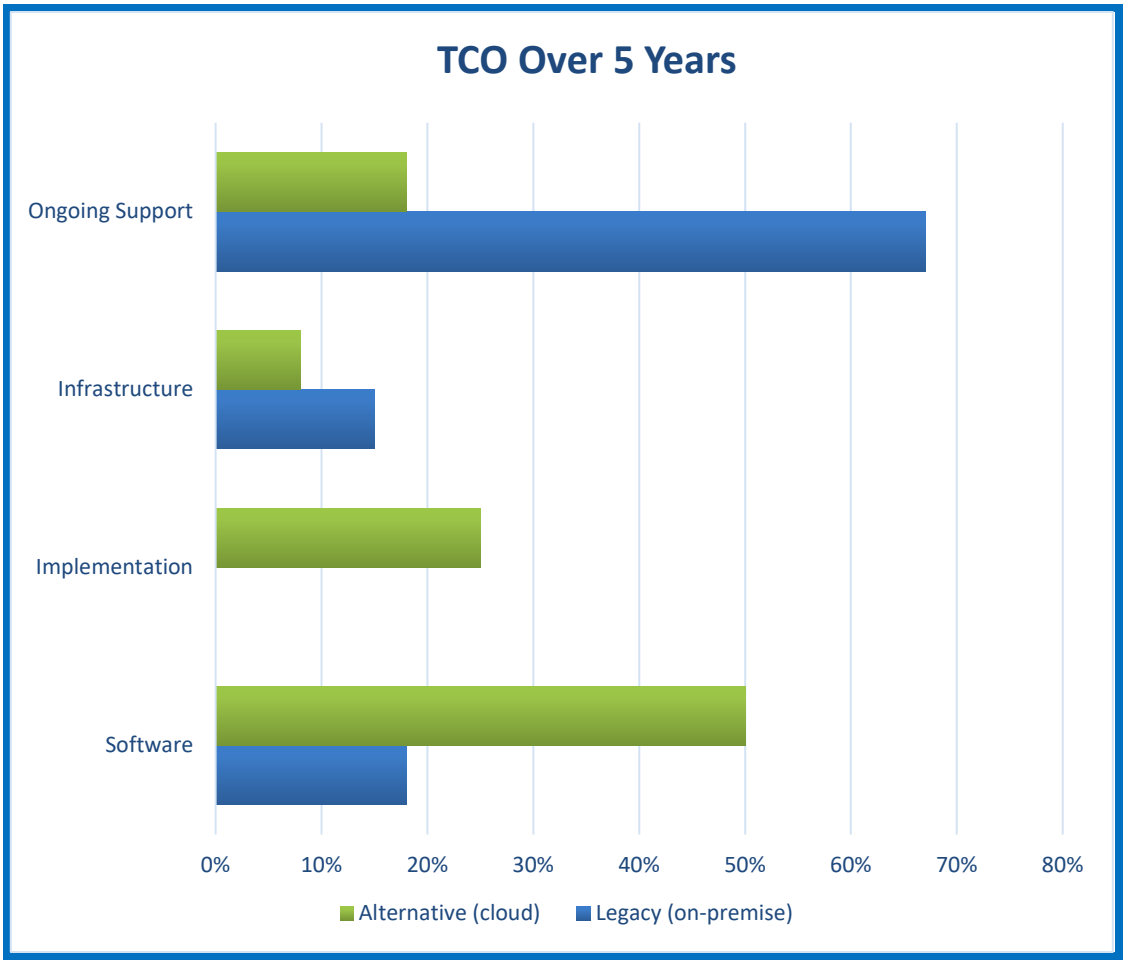
As highlighted in previous sections, here is a summary of the improved outcomes:

- Nimble, agile and innovative system ready for a changing environment.
- Business process efficiencies will allow staff and faculty to provide a premier education for students.
- Technology will meet the expectations of students, faculty and staff.
- Unified data rich with information to support data driven informed decisions.
- ITS will be an innovative partner with campus to provide impactful solutions.
- Cloud based solutions will lower the risk to the institution and reduce infrastructure costs.
- ITS workforce will shift from operation to an innovative environment.
- Moving from an operation to an innovative environment

ERP costs are not just software and hardware. The cost of providing the total infrastructure and ongoing people costs is very significant. In calculating the Total Cost of Ownership (TCO) of our ERP system, we have included:

1. Fees for software license and annual maintenance.
2. People costs for consultants and staff time to implement a new system.
3. Operating expenses for maintaining or replacing servers. system software, networking equipment, end user devices.
4. People costs for contractors and staff for hardware and networking support, software upgrades and bug fixes, custom development and third-party integrations.

   Based on our current on-premise legacy ERP vs a SaaS cloud system, the five-year TCO is below:



Over a five-year period, there is no significant difference in the costs between maintaining our legacy ERP system and implementing a modern SaaS solution ERP system. Our legacy ERP is already in place and has been paid for. However, we will start realizing more cost savings over a 10-year period. The first set of numbers compare the legacy annual maintenance fee to the annual SaaS subscription cost. The second set of bars shows the cost for implementing a new SaaS system. The third set of bars compares the infrastructure costs. The cost for our legacy system includes updating the hardware, system software, networking infrastructure and user devices. The cost of the SaaS is primarily user devices and networking infrastructure. The last set of data points is the people cost for ongoing support. Since much of the support is handled by the SaaS provider the cost of our legacy system support is much higher. A modern, cloud ERP has been proven to reduce costs in many ways because it: Avoids upfront costs for all computing infrastructure such as hardware and data servers. Reduces IT support services because IT is in the cloud. Eliminates paying upfront for application software licenses. Sets a fixed monthly rate so we can use our cash on other business initiatives.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

Describe the data protection and disaster recovery considerations factored into the plan. Indicate any cybersecurity implications if applicable.

Colorado School of Mines department of Information & Technology Solutions (ITS) works with the campus community to increase the security of the campus information infrastructure, including the data network and connected hosts. The security team provides critical monitoring and backup to the

current system and moving to a cloud provider would offer increased resiliency. Reasons for this include:

As the present solution is hosted on premise, it is dependent upon campus network services; if internet access is disrupted due to network interruptions or natural disasters, access to the core ERP/SIS is interrupted as well. There are periods that are not only high demand but also highly critical for the effective operations of Mines such as critical registration dates, grade submission deadlines, or financial aid disbursement windows and would be painful to experience an outage during these times.

The trend to adopt cloud hosted solutions is to offset these institutional risks and cost as cloud hosting offers geographically-distributed, fully redundant infrastructure, delivering a level of availability that is more cost effective then working to replicate this model independently.

Mines is only considering vendors who follow the ISO 27000 standards and regular completion of Service Organization Controls reporting. Vendors must also demonstrate adequate cybersecurity practices regarding PII, FERPA, HIPAA and PCI-regulated information.

L. BUSINESS PROCESS ANALYSIS:

Describe alternatives analyzed, cost-benefit analysis, and measures in place to prevent time and cost overruns. Articulate how the proposed project fits in with the institution's strategic IT plan.

Strategic Fit with IT Strategic Plan

Our vision in the Information and Technology Solutions Division at Mines as embodied in our IT Strategic plan is to create a premier and innovative information and technology environment supported by a robust, reliable, secure, world class infrastructure. Furthermore, we aspire to be a catalyst for Mines as a top of mind, first choice university for students, faculty, staff, and public and private partners. In the execution of this vision, we will be a service-oriented, collaborative partner with campus and beyond, both responsive and agile, striking an appropriate balance between providing robust and reliable technology solutions while being a fast adopter of new and emerging technologies. In addition, we will create an information and technology enterprise and culture that is empowering and enabling to the Mines community, by identifying solutions to pressing organizational, operational, institutional, local and global problems. Reviewing our ERP system aligns with our vision and strategic plan. We are forward thinking in our efforts to create an environment where information and technology are competitive differentiators for our students, educators, researchers, staff and partners. We are currently in the strategy and alignment phase review of our ERP system. This assessment will provide us with alternative solutions, cost benefit analysis and measures to prevent time and costs overruns.

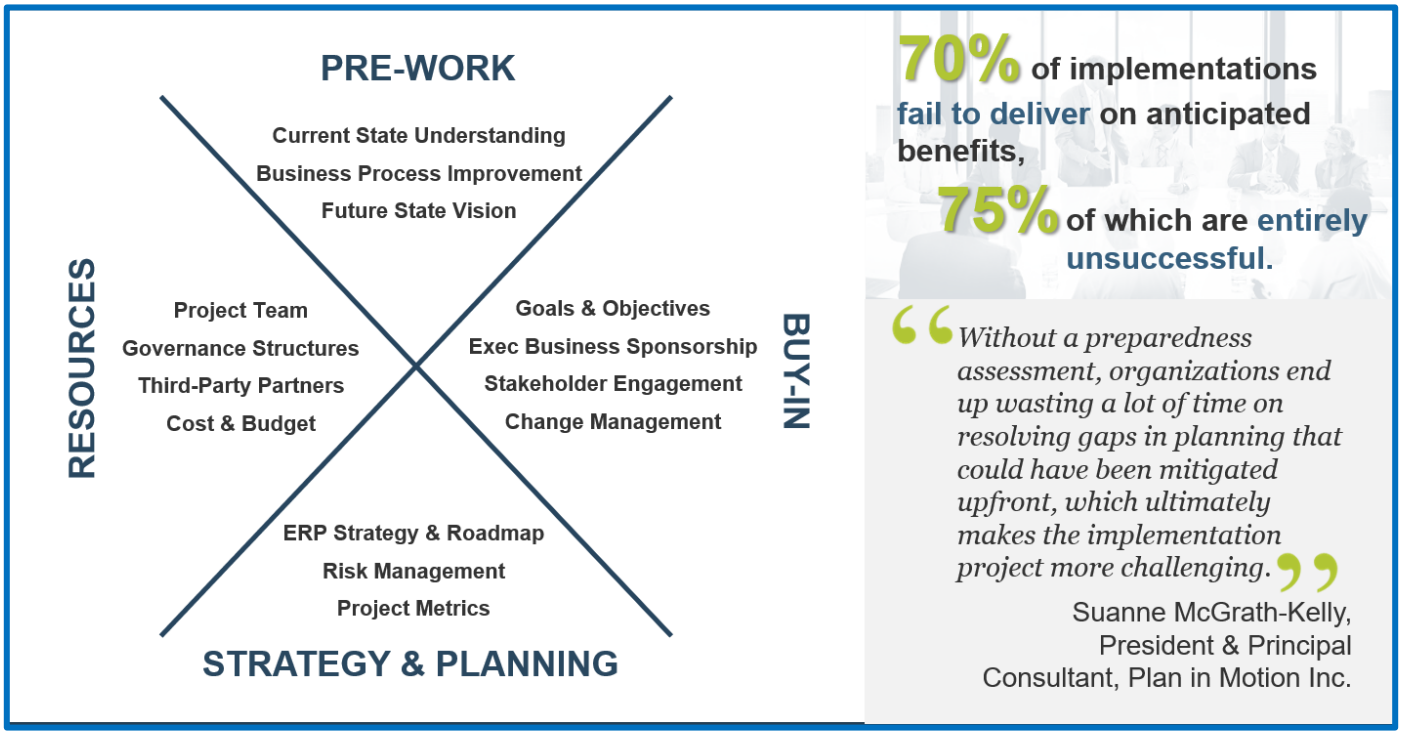
Alternatives Analyzed

As described above in Section A, Mines has engaged BerryDunn—an independent consulting firm experienced in higher education information technology—to conduct an objective ERP feasibility assessment. BerryDunn will work with Mines to understand our current ERP environment. Their work with us will include reviewing documentation and business processes, conducting surveys and focus groups with Mines stakeholders. The survey and work sessions will enable Mines stakeholders to provide input during this process and for BerryDunn to assess the appetite for change. The

information gathered, along with BerryDunn's knowledge of the ERP vendor marketplace, will result in recommendations that Mines' leadership will consider in planning our best path forward.

Organizational Readiness

Organizational readiness is essential for maximizing the benefits realized from an ERP implementation. To that end, Mines intends to cover all critical elements of pre-work, resources, obtaining buy-in, and strategy & planning before embarking on this ERP selection and implementation initiative.



- A cross-functional steering group that will be working with the Mines Project Governance Committee (PGC) will be established to ensure advocacy and buy-in across all campus stakeholder groups.
- Mines CFO has committed to hiring a dedicated ERP implementation expert to lead the project management and implementation efforts for this ERP project, working in collaboration with the Mines Project and Organizational Change Management Office.
- According to Panorama consulting solutions[1], **57%** of ERP projects experience budget overruns. Knowing this fact, Mines teams intends to avoid this **same fate by doing our due diligence in upfront planning to effectively anticipate scope, resourcing, and associated costs.**[1]

[1] Panorama Consulting Solutions, 2016

ERP Modernization

- Colorado Mesa University -

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 11/2/2021

FY22-23 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**State Funded**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Colorado Mesa University	(2) **Name & Title of Preparer:**	Laura Glatt, Vice President for Finance and Administration
(C)	(1) **Project Title:**	ERP Modernization	(2) **E-mail of Preparer:**	lglatt@coloradomesa.edu
(D)	(1) **Project Phase (__ of __):**	Phase 1 of 1	(2) **State Controller Project # (if continuation):**	N/A
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	Laura Glatt 5/1/2021
(F)	(1) **Year First Requested:**	FY 2022-23	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	1 of 1	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ 4,180,000	$ -	**$ 4,180,000**	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	**$ 4,180,000**	**$ -**	**$ 4,180,000**	**$ -**	**$ -**	**$ -**	**$ -**
	Equipment							
(28)	Servers	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	**$ 4,180,000**	**$ -**	**$ 4,180,000**	**$ -**	**$ -**	**$ -**	**$ -**
	Project Contingency							
(36)	5% for New	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ 418,000	$ -	**$ 418,000**	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 418,000	$ -	**$ 418,000**	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	**$ 4,598,000**	**$ -**	**$ 4,598,000**	**$ -**	**$ -**	**$ -**	**$ -**
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 4,133,602	$ -	**$ 4,133,602**	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 464,398	$ -	**$ 464,398**	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	TOTAL	**4,598,000**	**-**	4,598,000	**-**	**-**	**-**	**-**

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2022-23 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$4,133,602**	
Cash Fund Amount (CF):	$464,398	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Colorado Mesa University	
Project Title:	ERP Modernization	
Project Phase (Phase _of_):	1 of 1	
State Controller Project Number (if continuation):		
Project Type:		Technology Hardware
	x	Technology Software
Year First Requested:	FY 2021-22	
Priority Number (Leave blank for continuation projects):	1 OF 1	
Name & Title of Preparer:		
E-mail of Preparer:		
Institution Signature Approval:	*Laura Glatt*	Date: 5/1/2021
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

Colorado Mesa University is requesting state funds to modernize the University's Enterprise Resource Planning (ERP) system. The University is committed not only to upgrading its postmodern ERP system, but through the implementation of an ERP modernization strategy, it is committed to identifying and delivering on innovative business practices to best serve students, drive efficiency and lower the cost of attaining a higher degree.

The project modernizes the University's ERP strategy by completing the following:

- Migrating the core ERP—HR and Finance—systems to cloud services and enabling the University to develop a composable business strategy.
- Migrating the Student Information System to cloud services to improve the student experience and enhance student success initiatives.
- Implementing comprehensive data management and data integration strategies to allow the University to deploy more loosely coupled enterprise applications, improving business agility.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$4,133,602	$0	**$4,133,602**	$0	$0	$0	$0
Cash Funds (CF)	$464,398	$0	**$464,398**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$4,598,000**	**$0**	**$4,598,000**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

Colorado Mesa University is requesting state funds to modernize the University's Enterprise Resource Planning (ERP) system. For more than a decade the University has been optimizing business processes in an effort to digitally transform. The University's digital transformation journey has been a series of smaller projects to either automate processes or add functionality by adding point solutions to enhance core systems—HR, Finance and Student Information System—and implement a postmodern ERP. However, the University understands that a complete digital transformation is more than digitizing and automating processes and adding point solutions, and that a true digital transformation of its postmodern ERP system will enable the University to continuously evolve and proactively prepare for business disruptors in higher education.

Background

Colorado Mesa began using Ellucian Banner as its ERP and Student Information System in 1990. In 2008, an institution-wide technology initiative to utilize Banner more extensively was adopted as part of its *2008 Technology Master Plan*. Since then, the University has worked to maintain its on-premise instance of Banner and has focused on leveraging its ERP investment by re-implementing Banner modules and adding solutions to transform its business processes and student experience—developing a postmodern ERP. The University currently runs the latest release of its core ERP HR/Finance and Student Information System, and, over the last decade, the University has invested in numerous point solutions and integrated them with Banner to add functionality and web-services. The majority of the point solutions implemented and integrated with the ERP have been cloud-based solutions. For instance, in 2017, the University implemented a cloud-based HR employment applicant tracking system that included the development of a custom interface to feed new employee hire data from the applicant tracking system to Banner HR. Maintaining data integrations and ensuring the integrity of the data continues to be a challenge faced by technical staff.

In 2015, with the retirement of CMU's Oracle database administrator (DBA), the University contracted with Ellucian's Application Managed Services (AMS) to provide DBA services plus software maintenance and upgrades for all Ellucian licensed software. Employing qualified Banner technical and DBA staff has proven challenging in the past. The move to AMS has enabled the University to keep its ERP applications up to date and allowed CMU programmers to focus on business initiatives. In 2020, Ellucian informed CMU it would not renew its AMS contract past its end date in 2022 as part of its effort to move support to its cloud services team.

This method of transforming business processes and customer experiences as well as augmenting programming staff with contracted services has, to this point, allowed the institution to stay in step with business and student demands, though the University continually faces challenges to deploy new technologies adopted more straightforward by larger universities who have additional resources readily available. The University's ERP modernization project must position the institution to leverage ever-evolving technologies that not just re-implement business processes but re-imagine and deliver on business outcomes.

Scope of Work and Justification

The University is committed not only to upgrading its postmodern ERP system, but through the implementation of an ERP modernization strategy, it is committed to identifying and delivering on innovative business practices to best serve students, drive efficiency and lower the cost of attaining a higher degree. The ERP modernization strategy will enable the institution to be more agile, responsive to business demands and strategic initiatives, and innovative by leveraging the latest technologies. The University's postmodern ERP system represents all enterprise business capabilities and not only those systems related to resource planning. For this reason, the ERP modernization strategy must enable the institution to be flexible to meet business agility requirements and deliver desired and future business outcomes identified by the institution.

The University's ERP modernization project includes:

- Migrating the core ERP—HR and Finance—systems to cloud services and enabling the University to develop a composable business strategy.

As the University's digital transformation process accelerates, it is becoming increasingly more important that the institution's core HR and Finance systems advance to enable the University to leverage the latest technologies and keep pace with enterprise business capability requirements.

Cloud ERP vendors release new functionality at a faster pace than upgrades for on-premise solutions. In part, this is due to cloud HR and Finance systems being delivered in a configure-only state allowing revisions to be released more frequently with new technologies and more seamlessly, taking less time and with less disruption, without customer customizations. Migrating core ERP—HR and Finance systems to cloud platforms positions the University to not only be more agile but enables the University to leverage a composable business model.

- Migrating the Student Information System to cloud services to improve the student experience and enhance student success initiatives.

By leveraging cloud services, the University will be able to deliver the highest quality user experience, leveraging the latest technologies such as artificial intelligence and conversational interfaces. These innovative technologies will assist the University with keeping pace with student demands for a consumer-like experience. A goal of the ERP modernization project is to continue to transform the student experience, to offer students a seamless, data-informed, personalized experience whether they are in person or online.

- Implementing comprehensive data management and data integration strategies to allow the University to deploy more loosely coupled enterprise applications, improving business agility.

Critical to the success of an ERP modernization project is the development of data management and data integration strategies. The University must invest in an integration platform to address the growing challenges of supporting multiple enterprise-level systems and allow systems of record and transformational applications to work seamlessly together.

There are three main reasons for the University to deliver on a modern integration platform. First, for years systems of record have held back innovation, often requiring add-on point solutions to deliver transformative processes or even to meet business requirements and address constituent demands. Second, maintaining application programming interfaces or system integrations between the system of record and the auxiliary application is costly. These integration points are often a point of failure and the cause of data integrity issues. Third, vendor integration capabilities are often lacking real-time data synchronizing, leaving systems out of date, and are often inadequate due to the limited data transferred between the system of record and the auxiliary application. Therefore, the University must invest in an integration platform to address challenges with true digital business transformation.

Colorado Mesa plans to start each stage of the ERP modernization project in the first year with the goal to complete project in thirty months. Due to interdependencies of each stage of the project, it is important to make informed decisions and finalize integration steps in critical order as the institution's entire ERP system is moved to cloud services while maintaining existing integrations with add-on point solutions.
The University's first priority would be to kick-off the development of a data management strategy and evaluate integration platforms to support moving ERP applications to the cloud. It is anticipated that implementation of the selected integration platform would be substantially complete in twelve months, but development of integration connectors would continue for the duration of the ERP cloud migration process.

The work to migrate the Student Information System to cloud services, along with existing student service applications, document management systems and operational data store would be done in tandem with the implementation of the integration platform selected. This part of the project is planned and fully vetted and needs to be completed before the University's application managed services contract ends in 2022.

The final part of the project, migrating HR and Finance to cloud services, will require the longest time to complete, an estimated 14-16 months. For ease of reporting and closing year end reports, it is important for the Finance systems to go live at the start of a fiscal year, July 1. The University plans to formally assess core ERP, HR and Finance systems, before starting the implementation process that is anticipated to take 10-11 months.

This project supports the following Higher Education Master Plan goals:

- Increase Credential Completion and Improve Student Success. The University feels strongly that meeting student technology expectations, including providing a quality end user experience, is critical to a student's success and attaining a degree. Students continually engage in digital experiences, and by removing unnecessary challenges and barriers with information systems and online services, the University will be able to retain and assist more students to degree completion.
- Invest in Affordability and Innovation. The University understands the importance of affordability of higher education. By expanding its financial planning and analysis capabilities and implementing additional business intelligence tools, the University will be able to transform data much faster into

actionable information to reduce the University's expenditures by identifying efficiencies, delivering courses and supporting students in the most economical manner that meets the needs of students.

D. PROGRAM INFORMATION:

All University constituents and its programs will benefit from the migration of its postmodern ERP to cloud services and the implementation of an ERP modernization strategy, enabling the University to be more agile, leverage the latest technology, deliver on enterprise business capabilities, and transform the employee and student experience.

Overall, the University campus community will benefit from:

- Delivering future and current employees and students enhanced online services to assist users with understanding requirements and completing tasks by leveraging the latest technologies in personalized support such as artificial intelligence and conversational interfaces.
- Implementing a full Human Capital Management (HCM) suite to add capabilities for applicant selection, advanced time tracking to include Family Medical Leave (FML) and disability leave, employee performance and position management to include position descriptions and organization charts, professional development and learning platforms, and onboarding with automated benefit enrollment and tracking.
- Expanding recruitment tools to support the University's diversity and inclusion goals by adopting capabilities/technologies such as AI to reduce unconscious bias in job postings and target underrepresented groups in the jobs market, as well as analytics to quantify the impact of diversity and equality/inclusivity in the workforce.
- Advancing embedded workforce reporting and analytics for affirmative action reporting, FML and leave reporting, employee turnover, and compensation and other HR reporting needs. Embedded tools would provide data analysis to users within their natural workflow, without having to bring up another reporting tool.
- Expanding financial planning and analysis capabilities to enable continuous financial forecasting and budget scenario modeling. This project includes streamlining the budget process to move beyond the use of spreadsheets and e-forms to an integrated budget building and approval process.
- Automating travel and expense approvals and expense report submissions. The development of an integrated, streamlined expense submission and approval routing process will ensure user accountability with timely completion of travel and expense reports and supervisor approvals.
- Implementing a Finance system with an embedded reporting, business intelligence, and analytics tool. Delivering intuitive, customizable analytics with relevant data into the business applications will result in a higher rate of adoption and greater productivity by users. Data will transform into information that can be used to make intelligent business decisions.
- Leveraging cloud services, the University will reduce the time necessary to deploy its ERP strategy and deliver on business objectives at start-up and continuously.

The University's Information Technology Department will benefit from the following:

- The University's move to cloud services will enable the institution to maintain its current level of technical positions for supporting its ERP applications.

- Cloud ERP vendors release new functionality at a faster pace than upgrades for on-premise installations and do not require staff programmers to apply localizations before departments can leverage the latest product advancements.
- By moving ERP applications to cloud services, the University will eliminate the expense of supporting on-premise hardware—servers, data storage, and data backup systems—and associated datacenter infrastructure costs such staff resources and third-party licensing.
- The University business continuity plan recovery times for the ERP database server will be dramatically improved to less than two hours after moving to cloud services. Currently, a hardware failure or damage of production server would likely cause a one- to two-day outage.
- Reduce burden on technical staff to meet data security responsibilities under the Gramm-Leach-Bliley Act and upcoming regulatory requirements under 32 C.F.R. Part 2002 to comply with the National Institute of Standards and Technology Special Publication 800-171 Rev. 2, Controlled Unclassified Information in Nonfederal Systems (NIST 800-171 Rev. 2) for protecting personally identifiable information used in administrating federal student aid programs.

IT Health, Security and Industry Standards

IT systems associated with proposed project are fully supported by developer: The ERP systems being evaluated with this project are fully supported by experienced vendors with an extensive list of higher education customers. Cloud ERP solutions leverage leading cloud infrastructure platforms such as Amazon Web Services to provide reliable, scalable and secure IT systems that are fully supported by the developer.

Cybersecurity of IT systems/devices associated with project is up to industry standards: Colorado Mesa will evaluate ERP vendors based on a range of important information security considerations. These include mature security practices that adhere to evolving industry standards for cloud-based data protection. In addition, information security and privacy procedures will be expected to comply with federal, state, and local laws and regulations applicable to the data and the vendor's performance under the agreement.

The Cloud Security Alliance (CSA) encourages the use of industry best practices providing the assurance of data security within cloud computing. Vendors having experience with the Consensus Assessments Initiative Questionnaire will be able to indicate their alignment with the best practices encouraged by the alliance. The level of compliance with these best practices will be considered in the evaluation of ERP vendors hence increasing the security stance of the solution once implemented.

The ERP vendor will provide current documentation showing independent verification of compliance with Service Organization Control (SOC) audits. This information will include the financial auditor's assessment as well as a description of the controls in place. The vendor will also provide their response to any findings of note.

Payment Card Industry Data Security Standard (PCI DSS) compliance as a service provider will be confirmed in order to ensure the proper protection of payment cardholder data. The vendor will provide documentation indicating an engagement with a Qualified Security Assessor confirming compliance.

The University will only evaluate vendors that demonstrate a clear commitment to abide by the limitations of disclosure regarding personally identifiable information from education records set forth in the Family Educational Rights and Privacy Act (20 U.S.C. § 1232g; 34).

Articulates how project fits in with current disaster recovery system: The University business continuity plan recovery times for the ERP database server will be dramatically improved to less than two hours after moving to cloud services. Currently, a hardware failure or damage of production server would likely cause a one- to two-day outage.

Vendors utilizing well established cloud-based storage solutions are able to take advantage of existing, highly developed continuity and recovery plans offered by high end cloud storage infrastructure providers. These capabilities coupled with the vendor's own business continuity and disaster recovery plan will provide an improved response time as well as a reduced recovery time. ERP systems following this model are able to leverage the additional recovery capabilities available to them by enhancing their existing security, risk and other relevant team member's capabilities to recover from an incident more quickly than a locally hosted solution is often capable of and in the University's case, this would improve our recovery window.

Other Fund Sources
CMU is able to contribute 10.1% to the cost of the project.

Quality of Planning/Proposal
Cost-benefit analysis performed with positive outcome: Colorado Mesa University developed the cost of the project using estimates of competing ERP vendors, technology consultant input, and information jointly shared among Colorado schools collaborating on project plans and strategies to modernize ERP systems. While this project to modernize the University's ERP system will significantly enhance the institution's business capabilities and user experience as well as enable business agility, the ongoing cost to leverage cloud-based ERP solutions will increase the University's Information Technology annual operating budget. The ongoing operational budget increase will be partially offset by savings in areas such as data center infrastructure costs; third-party licensing; dropping obsolete third-party add-on applications; and replacing Ellucian's Application Managed Service charges. However, the University strongly believes the performance outcomes, efficiencies gained and improvements to the institution's business capabilities, user experience and student retention goals as a result of this digital transformation will by far outweigh the impact to the annual budget.

Proposal articulates how the project fits in the with institution's strategic IT plan: CMU's ERP Modernization project supports its *2020 Strategic Plan* Goal 3, Objective 3: to improve business processes and institutional decision making through the use of technology. This strategic objective is aligned with Goal 3 of the University's *2020 Technology Master Plan* to Implement web-based administrative platforms and modernize the University's Enterprise Resource Planning (ERP) systems to improve services. Modernizing the University's ERP and enterprise systems including the migration to cloud services was identified as a priority for the institution.

Alternatives analyzed: The University will evaluate only vendors that can demonstrate they are innovative and bring additional value to the University's business and can deliver on business agility requirements, drive operational efficiencies, improve student retention and assist students with degree completion, and

lower the overall cost of students attaining a higher degree. The University is working with a technology consulting firm to develop an ERP and composable business strategy.

In addition, the institution has undergone a strategic assessment process with its ERP vendor. This process identified several recommendations to assist the University with its digital transformation journey. One recommendation was migrating to the vendor's managed cloud services as part of its ERP modernization initiative. Moreover, the University's ERP vendor has notified the institution that it will no longer offer its Application Managed Services to support on-premise ERP installations when the University's existing contract ends in 2022. This in part, is an effort to work with customers to move support to cloud services and eliminate the expense of supporting on-premise hardware—servers, data storage, and data backup systems—and associated datacenter infrastructure costs such staff resources and third-party licensing. The University has completed the vendor's Cloud Discovery questionnaire and integrations workbook in preparation to migrating to cloud services. An analysis of the University current on-premise ERP hardware and software costs and moving to cloud services is completed.

Further, the University has identified a technology consulting firm that has extensive experience working with higher education customers to perform an assessment of existing data structures, establish new data governance models and develop an overall data management strategy for moving enterprise and ERP applications to the cloud. This work will be part of a systematic approach to identify the best integration platform for the University's ERP modernization project.

Proper measures in place to prevent time and cost overruns: Colorado Mesa developed the cost of the project using estimates of competing ERP vendors, technology consultant input, and information jointly shared among Colorado schools collaborating on project plans and strategies to modernize ERP systems. Along with pricing, standard implementation timelines have been provided by ERP vendors. However, to protect against project overruns, the University is recommending a 10% project contingency to cover unforeseen project costs that may arise when implementing new systems and developing new system integrations and inflationary costs with software and services, as well as additional time has been built into each vendor implementation schedule to protect against project overruns.

Proposed project is cohesive and is not a combination of smaller, unrelated projects: The University plans to migrate its entire ERP to cloud services as part of the proposed project to modernize its ERP, core HR/Finance and Student Information System. Critical to the success of an ERP modernization project is the development of data management and data integration strategies to enable systems of record and transformational applications to work seamlessly together.

Achieves Goals

This project supports the following Higher Education Master Plan goals:

- Increase Credential Completion and Improve Student Success. The University feels strongly that meeting student technology expectations, including providing a quality end user experience, is critical to a student's success and attaining a degree. Students continually engage in digital experiences, and by removing unnecessary challenges and barriers with information systems and online services, the University will be able to retain and assist more students to degree completion.
- Invest in Affordability and Innovation. The University understands the importance of affordability of higher education. By expanding its financial planning and analysis capabilities and implementing

additional business intelligence tools, the University will be able to transform data much faster into actionable information to reduce the University's expenditures by identifying efficiencies and delivering courses and supporting students in the most economical manner that meets the needs of students.

Governing Board Priority
This project is CMU's top IT priority.

All University constituents and its programs will benefit from the migration of its postmodern ERP to cloud services and the implementation of an ERP modernization strategy, enabling the University to be more agile, leverage the latest technology, deliver on enterprise business capabilities, and transform the employee and student experience. This project will meaningfully affect anyone using administrative systems— all students, faculty, and staff members, as well as prospective students and employees— applying for work, paying a bill, registering for classes, or applying for financial aid.

Project Involves Multiple Institutions: Colorado Mesa continues to collaborate closely with Colorado University peers, both formally and informally, to align our ERP/SIS strategies and deliver measurable improvements for students at institutions across the state. In particular, we meet regularly with Metropolitan State University of Denver, Colorado School of Mines, and University of Northern Colorado. Our collaborative approach has yielded a net software licensing savings of over 13%, and we anticipate implementation savings of approximately 20% as a result of our cooperative work. Further, this project was built as a joint activity with University of Northern Colorado. We will take advantage of vendor pricing, consultant management, functional team expertise, RFP composition and ultimately selection of supporting vendors. We will also benefit from communications with institutions working through various stages of the ERP migrations.

For reference, we have appended the Letter of Intent, signed by the Presidents of Colorado Mesa University, MSU Denver, Colorado School of Mines, and University of Northern Colorado, to the end of this document.

E. CONSEQUENCES IF NOT FUNDED:
If this project is not funded, Colorado Mesa would continue to maintain its on-premise servers, storage and backup hardware that supports its postmodern ERP. In addition, the University's software maintenance contract with its ERP vendor, Ellucian, is reaching end of term in 2024. In order to continue to run ERP application on premise, the University would have to purchase replacement hardware and renegotiate another software maintenance agreement in the next two years. Further, the University's contract for Ellucian's Application Managed Services and DBA services ends in 2022 and will not be offered by the vendor moving forward. Recruiting qualified Banner technical and DBA staff has proven challenging in the past and will only get more difficult as vendors move to cloud services. With the future direction of ERP solutions being cloud-based, and with vendor push to move to cloud services, it will be difficult to negotiate another financially prudent agreement for CMU's on-premise ERP installation.

Moreover, Colorado Mesa University's ERP modernization project is critical to identifying and delivering on innovative business practices to best serve students, drive efficiency and lower the cost of attaining a higher degree. Without the requested project funds to modernize the postmodern ERP system, the University's digital transformation progress would be severely hampered, and we risk losing competitive position with other universities across Colorado and the nation.

F. ASSUMPTIONS FOR CALCULATIONS:

Colorado Mesa University developed the cost of the project using estimates of competing ERP vendors, technology consultant input, and information jointly shared among Colorado schools collaborating on project plans and strategies to modernize ERP systems. Estimates for migrating to cloud services, including implementation services, were provided by two providers.

A financial challenge to migrating ERP core HR and Finance systems to cloud services is the overlap in maintenance/software subscription for one year. During the migration, the University must maintain two ERP systems. With this project request, the University is asking for financial assistance to help cover the additional costs with the first year of software costs. Annual licensing and support cost for subsequent years will be covered by the institution.

Another challenge the University will face during the migration of ERP systems to cloud services and the reimplementation of business process is the time commitment by key employees whose main day-to-day duties still need to be performed to run the University. Part of the project funding request is funding for temporary staff positions to take workload off key staff to allow them to focus on the ERP migration process. The University anticipates the need to hire 4-5 temporary staff members for both the HR/Finance and Student Information System cloud implementation phases.

By collaborating with other universities across the State to align our ERP/SIS strategies, Colorado Mesa has yielded a net software licensing savings of over 13%. In addition, by working closely with the University of Northern Colorado and collaboratively across all institutions of higher education, the University anticipates a 20% savings on implementing its ERP modernization strategy. The majority of the implementation savings will be the result of cooperative work developing application interfaces/integrations. By working closely with the University of Northern Colorado, both institutions will save in the areas of:

- Administrative overhead: contract, consultant and project management.
- Temporary staff costs: reduced training time of backfill staff for day-to-day operations.
- Joint training engagements: collaborative business analysis training and process development.
- Interfaces/Integration Development: cooperatively build/share interface code to third-party applications.

G. OPERATING BUDGET IMPACT:

While this project to modernize the University's ERP will significantly enhance the institution's business capabilities and user experience as well as enable business agility, the ongoing cost to leverage cloud-based ERP solutions will increase the University Information Technology operations annual budget. The ongoing operational cost increase will be partially offset by eliminating the expense of supporting on-premise hardware—servers, data storage, and data backup systems—and associated datacenter infrastructure costs such staff resources and third-party licensing; dropping obsolete third-party add-on point solution applications such as the applicant tracking software; and eliminating Ellucian's Application Managed Service charges. The University is taking steps to identify budget to absorb the net increase of the annual software licensing and cloud service costs.

CMU's Information Technology staff is lean by most campus standards. This project will not eliminate technical staff, but the University's move to cloud services will enable the institution to maintain its current level of technical positions supporting its ERP applications.

H. PROJECT SCHEDULE:

Phase 1 of 1	Start Date	Completion Date
Pre-Design		
Design/Implementation	**March 2022**	**December 2024**
Construction		
FF&E /Other		
Occupancy		

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	□ Yes	☑ No
Request 6-month encumbrance waiver:	□ Yes	☑ No
Is this a continuation of a project appropriated in a prior year:	□ Yes	☑ No
State Controller Project Number (if continuation):		

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

Colorado Mesa University developed the cost of the project using estimates of competing ERP vendors, technology consultant input, and information jointly shared among Colorado schools collaborating on project plans and strategies to modernize ERP systems. Savings in areas such as data center infrastructure costs that will be eliminated by moving to a cloud-based ERP were taken into consideration along with project cost savings by leveraging shared implementation and training services. However, the additional cloud service charges are expected to increase the University's annual ERP costs in order to significantly enhance the institution's business capabilities and user experience as a result of its digital transformation.

The ongoing operational cost increase will be partially offset by eliminating the expense of supporting on-premise hardware—servers, data storage, and data backup systems—and associated datacenter infrastructure costs such staff resources and third-party licensing; dropping obsolete third-party add-on point solution applications such as the applicant tracking software; and replacing Ellucian's Application Managed Service charges. The University is taking steps to identify budget to absorb the net increase of the annual software licensing and cloud service costs.

The University's analysis, with input and information from a global IT consulting and advisory company, has identified future cost avoidance in technical programming staff positions. Information Technology staff is lean by most campus standards. This project will not eliminate technical staff, but the University's move to cloud services will enable the institution to maintain its current level of technical positions needed to support ERP application integrations along with all other enterprise software moving forward.

The University is committed to not only upgrading its postmodern ERP system, but through the implementation of an ERP modernization strategy it will identify and deliver on innovative business practices to best serve students, drive efficiency and lower the cost of attaining a higher degree. The ERP modernization strategy will enable the institution to be more agile, responsive to business demands and

strategic initiatives, and innovative by leveraging the latest technologies. Performance outcomes and key business capabilities that the University will gain by implementing its ERP modernization strategy are outlined in the Program Information section and in the statement of work.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

Colorado Mesa will be selecting an ERP vendor based on a range of important information security considerations. These include mature security practices that adhere to evolving industry standards for cloud-based data protection. In addition, information security and privacy procedures will be expected to comply with federal, state, and local laws and regulations applicable to the data and the vendor's performance under the agreement.

The Cloud Security Alliance (CSA) encourages the use of industry best practices providing the assurance of data security within cloud computing. Vendors having experience with the Consensus Assessments Initiative Questionnaire will be able to indicate their alignment with the best practices encouraged by the alliance. The level of compliance with these best practices will be considered in the evaluation of ERP vendors hence increasing the security stance of the solution once implemented.

The ERP vendor will provide current documentation showing independent verification of compliance with Service Organization Control (SOC) audits. This information will include the financial auditor's assessment as well as a description of the controls in place. The vendor will also provide their response to any findings of note.

Payment Card Industry Data Security Standard (PCI DSS) compliance as a service provider will be confirmed in order to ensure the proper protection of payment cardholder data. The vendor will provide documentation indicating an engagement with a Qualified Security Assessor confirming compliance.

The University will only evaluate vendors that demonstrate a clear commitment to abide by the limitations of disclosure regarding personally identifiable information from education records set forth in the Family Educational Rights and Privacy Act (20 U.S.C. § 1232g; 34).

The University business continuity plan recovery times for the ERP database server will be dramatically improved to less than two hours after moving to cloud services. Currently, a hardware failure or damage of production server would likely cause a one- to two-day outage.

Vendors utilizing well established cloud-based storage solutions are able to take advantage of existing, highly developed continuity and recovery plans offered by high end cloud storage service providers. These capabilities coupled with the vendor's own business continuity and disaster recovery plan can provide an improved response time as well as a reduced recovery time. ERP systems following this model are able to leverage the additional recovery capabilities available to them by enhancing their existing security, risk and other relevant team member's capabilities to recover from an incident more quickly than a locally hosted solution is often capable of and in the University's case, this would improve our recovery window.

L. BUSINESS PROCESS ANALYSIS:

Colorado Mesa has undergone a strategic assessment process with its ERP vendor. This process identified several recommendations to assist the University with its digital transformation journey. One recommendation was migrating to the vendor's managed cloud services as part of its ERP modernization

initiative. Moreover, the University's ERP vendor has notified the institution that it will no longer offer its Application Managed Services to support on-premise ERP installations when the University's existing contract ends in 2022. This in part, is an effort to work with customers to move support to cloud services and eliminate the expense of supporting on-premise hardware—servers, data storage, and data backup systems—and associated datacenter infrastructure costs such staff resources and third-party licensing. The University has completed the vendor's Cloud Discovery questionnaire and integrations workbook in preparation for migrating to cloud services. An analysis of the University's current on-premise ERP hardware and software costs and moving to cloud services is completed.

The University is evaluating only vendors that can demonstrate they are innovative and bring additional value to the University's business and can deliver on business agility requirements, drive operational efficiencies, improve student retention and assist students with degree completion, and lower the overall cost of students attaining a higher degree. The University has engaged an IT consulting and advising firm to assist in the development of its ERP and composable business strategy. This consulting engagement is assisting CMU with its ERP modernization roadmap to assess product and business options and campus readiness for taking on this critical and transformative project.

Further, the University has identified a technology consulting company that has extensive experience working with higher education customers to perform an assessment of existing data structures, establish new data governance models and develop an overall data management strategy for moving enterprise and ERP applications to the cloud. This work will be part of a systematic approach to identify the best integration platform for the University's ERP modernization project.

Last, CMU's ERP Modernization project supports its 2020 Strategic Plan Goal 3, Objective 3: to improve business processes and institutional decision making through the use of technology. This strategic objective is aligned with Goal 3 of the University's 2020 Technology Master Plan to Implement web-based administrative platforms and modernize the University's Enterprise Resource Planning (ERP) systems to improve services. Modernizing the University's ERP and enterprise systems including the migration to cloud services was identified as a priority for the institution.

ERP Modernization and Cloud Migration

- University of Northern Colorado -

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 11/2/2021

FY22-23 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	**CCF**	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	University of Northern Colorado	(2) **Name & Title of Preparer:**	Bret Naber, Assistant Vice President/CIO
(C)	(1) **Project Title:**	ERP Modernization and Cloud Transistio	(2) **E-mail of Preparer:**	bret.naber@unco.edu
(D)	(1) **Project Phase (__ of __):**	1 of 1	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	Date
(F)	(1) **Year First Requested:**	FY 23	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	___1__ of ___2___	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors (Backfill Functional Teams)	$ 415,000	$ -	$ 415,000	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ 40,000	$ -	$ 40,000		$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ 100,000	$ -	$ -	$ -	$ -
(10)	Other Services/Costs (Implementation)	$ 1,955,000	$ -	$ 1,955,000		$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 2,510,000	$ -	$ 2,510,000	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ 1,785,729	$ -	1,785,729	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	**$ 1,785,729**	**$ -**	**$ 1,785,729**	**$ -**	**$ -**	**$ -**	**$ -**
	Equipment							
(28)	Servers	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	**$ 4,295,729**	**$ -**	**$ 4,295,729**	**$ -**	**$ -**	**$ -**	**$ -**
	Project Contingency							
(36)	5% for New	$ 214,786	$ -	**$ 214,786**	**$ -**	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 214,786	$ -	**$ 214,786**	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	**$ 4,510,515**	**$ -**	**$ 4,510,515**	**$ -**	**$ -**	**$ -**	**$ -**
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 4,325,584	$ -	**$ 4,325,584**	**$ -**	**$ -**	**$ -**	$ -
(41)	Cash Funds (CF)	$ 184,931	$ -	**$ 184,931**	**$ -**	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	TOTAL	**4,510,515**	**-**	**4,510,515**	**-**	**-**	**-**	**-**

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2022-23 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$4,325,584**	
Cash Fund Amount (CF):	$184,931	
Intercept Program Request? (Yes/No):	No	
Institution Name:	University of Northern Colorado	
Project Title:	ERP Modernization and Cloud Migration	
Project Phase (Phase _of_):	1 of 1	
State Controller Project Number (if continuation):		
Project Type:		Technology Hardware
	X	Technology Software
Year First Requested:	FY 2021 - 2022	
Priority Number (Leave blank for continuation projects):	1 OF 2	
Name & Title of Preparer:	Bret Naber, Assistant Vice President/CIO	
E-mail of Preparer:	Bret.naber@unco.edu	
Institution Signature Approval:		Date
OSPB Signature Approval:		Date
CDHE Signature Approval:		Date

A. PROJECT SUMMARY/STATUS:

The University of Northern Colorado is requesting state funding to implement an Enterprise Resource Planning (ERP) Modernization and Cloud Transition project. This project is part of a significant transformation to move the University to a modern, sustainable ERP platform. The project will include analysis of current business processes, a deployment of a data hub system focused on agility and sustainability, consolidation of identity management systems and the transition of UNC's ERP to the cloud.

UNC has operated the Banner on-premise ERP since 2006. Over the course of the last 15 years, we have added substantial systems and custom coding to keep up with our institutional needs. UNC staff has maintained all of the hardware and software for the ERP system. This included all upgrades and enhancements. The capabilities of our Ellucian ERP system have fallen behind major competitors. Several strong Software as a Service (SaaS) providers have modernized the landscape of the Higher Education ERP. Significant investments in staff, hardware and software are embedded in our current on-premise ERP system. This project will allow us to pivot to a SaaS platform and redirect our resources to a modern platform. This will include a transformation in staff and support. UNC will be able to forgo future investments for data center equipment with the completion of this project. This project will take 24-30 months to complete.

B. SUMMARY OF PROJECT FUNDING REQUEST:

UNC is able to contribute 4.1% to the cost of the project.

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request
Capital Construction Funds (CCF)	$4,325,584	$0	**$4,325,584**	**$0**	$0
Cash Funds (CF)	$184,931	$0	**$184,931**	**$0**	$0
Reappropriated Funds (RF)	$0	$0	**$0**	**$0**	$0
Federal Funds (FF)	$0	$0	**$0**	**$0**	$0
Total Funds (TF)	**$4,510,515**	**$0**	**$4,510,515**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

The ERP Modernization and Cloud Transition project includes a fundamental change in the underlying data exchange process, identity management and agility of the ERP environment. This project will also allow the institution to align with other Colorado Higher Education institutions who are implementing changes to their ERP systems. The core components of this request are as follows:

ERP Analysis

This project includes an analysis of our current ERP functionality. Several other institutions have used this process to identify significant opportunities to improve the business capabilities of their ERP system. We refuse to move inefficient business processes forward to a new ERP system.

As part of this request, we will conduct a readiness assessment. The assessment will include the following:

- Review Assessment of Business Processes
- Gap Analysis of Current ERP system
- ERP Market and Financial Analyses
- Migration Impact and Consideration
- Stakeholder Readiness Assessment

Integration Tools

Modern integration tools have changed the way systems interact and exchange information. There is a need to migrate from legacy batch scheduling systems and custom-built data exchanges to a modern data hub configuration. These new systems are scalable, provide greater redundancy for business continuity, and require less custom programming.

Identity Management

In our current ERP environment, we use the ERP as the center of our authorization process for student, staff, and faculty. Although this served us well in the past, it has held us back from a more modern and efficient solutions to identity management. A more robust solution is needed along with a move to role-based security to enable efficiency managing employment and student status changes.

Managed Cloud

As a preliminary step to move the ERP to a SaaS solution, our ERP system needs to transition to a cloud platform. This step allows us to migrate all of our interfaces into the new data hub and change our authentication to a centralized platform. This step also moves our ERP out of our existing data center, alleviating another cycle of hardware purchases, maintenance, and support.

Overlap Maintenance

One of the most financially impactful consequences of this project is the overlap of maintenance while we transition to SaaS. During the transition, UNC must maintain two ERP systems. In this proposal we are asking for relief of the additional costs with year one of a SaaS solution. The following years of maintenance can be absorbed by UNC. We have also planned for backfill positions in functional areas.

Collaborations

We will continue collaboration with several other State institutions that are completing similar migrations. This project was built as a joint activity with Colorado Mesa University. We will take advantage of vendor pricing, consultant management, functional team expertise, RFP composition and ultimately the selection of supporting vendors. We will also benefit from communications with institutions working through various stages of the ERP transition. In Spring of 2021, UNC signed a letter of intent with Colorado Mesa University, Colorado School of Mines, and Metro State to work together as the institutions look for opportunities to modernize their ERP

environment. These two institutions received funding for FY22 for a similar ERP project. We currently meet biweekly with Mines, MSU Denver and CMU. We also meet monthly with other institutions that are implementing solutions. Specifically, we are in communication with Aims Community College, Western Colorado University, Fort Lewis College, and Adams State University.

D. PROGRAM INFORMATION:

The entire campus will benefit from the migration of its postmodern ERP to cloud services and the implementation of an ERP modernization strategy, enabling the University to be more agile, leverage the latest technology, deliver on enterprise business capabilities, and transform the employee and student experience. Project Alignment with Strategic Goals are as follows:

Higher Education Master Plan Goals

This project aligns with several of the Colorado Higher Education Master Plan Goals. This project has specific ties to Improving Student Success and Investing in Affordability and Innovation. Meeting student technology expectations, including providing a quality end user experience, is critical to a student's success and attaining a degree. Students continually engage in digital experiences, and by removing unnecessary challenges and barriers with information systems and online services, the University will be able to retain more students through degree completion. This project also supports the investments in affordability and innovation. The University understands the importance of affordability of higher education. By expanding its financial planning and analysis capabilities and implementing additional business intelligence tools, the University will be able to transform data much faster. This will help UNC identify efficiencies in the way it delivers courses and support students in the most economical manner.

Alignment with UNC's Vision for 2030

This project supports several of UNC's visioning initiatives. Below are the key alignments:

Students First: We exist to transform the lives of our students. We focus on all aspects of their success by making intentional decisions to meet their needs and the needs of our community.

- A modern ERP platform increases functionality and flexibility that will improve the student experience.
- This transformation will lead to efficiency in processing, better analytics, and increased capability to forecast student outcomes and interventions.
- This project will increase integration between systems and better utilization of data.

Enhance & Invest: The success of students relies on a healthy and strong team. We provide our staff and faculty with the support they need to succeed as professionals, educators, and in life. We foster an environment where their individual well-being and sense of belonging are vital to our collective success.

- The efficiencies gained by faculty and staff will allow for more dedication of resources to be allocated to student outcomes.

Innovate & Create: Learning occurs through critical inquiry, discovery, and creation. We leverage technology and capitalize on opportunities to innovate and improve instruction. We anticipate and address societal needs by transforming the campus into a creative laboratory that asks questions, solves problems, and shapes Colorado's future.

- The New ERP strategy will provide streamlined system management and business process redevelopment. Through the implementation, the business processes will be evaluated and re-engineered.

E. CONSEQUENCES IF NOT FUNDED:

If this project is not funded, UNC will continue to maintain the legacy ERP infrastructure on premise. This would require another purchase of hardware and full cycle of support contracts. It will require maintaining staff that has become difficult to retain and attract. It will also be difficult to structure another financially prudent contract with our current ERP vendor, Ellucian who is no longer providing managed services for on premise clients. Ellucian continues to reduce service and assistance for clients who manage their own ERP environments. We would have to continue to utilize our legacy ERP system and forgo opportunities to move forward. We would lose competitive position with other Colorado institutions and universities across the country.

F. ASSUMPTIONS FOR CALCULATIONS:

UNC and Colorado Mesa University developed the cost of the project using estimates of competing ERP vendors, technology consultant input, and information jointly shared among Colorado schools collaborating on project plans and strategies to modernize ERP systems. Estimates for migrating to cloud services, including implementation services, were provided by two providers.

By working closely with the Colorado Mesa and collaboratively across all institutions of higher education, the UNC anticipates a 20% savings on implementing its ERP modernization project of 20%. The majority of the implementation savings will be the result of cooperative work developing application interfaces. By working closely with the Mesa, both institutions will save in the areas of:

- **Temp Staff** – Utilize backfill
- **Training-** Joint Training, Collaborative Business Analysis Training
- **Interfaces/Integration Development –** Work together to build interfaces to third parties
- **Vendor/Consultant Management –** Identifying the best resources and utilizing only critical services
- **Administrative Overhead -** Contract Management and Negotiation
- **Data Hub Implementation –** Vendor selection and opportunities leverage complex interfaces

While this project to modernize the University's ERP will significantly enhance the institution's business capabilities and user experience as well as enable business agility, the ongoing cost to leverage cloud-based ERP solutions will increase the University Information Technology operations annual budget. The ongoing operational cost increase will be partially offset by eliminating the expense of supporting on-premise hardware—servers, data storage, and data backup systems—and associated datacenter infrastructure costs.

G. OPERATING BUDGET IMPACT:

An extensive analysis was completed to assess the impact to UNC's budget. During the first two years of the project we anticipate minor adjustments to our operating budget. We have requested state funds to operate the new ERP system in the first year of operation. In FY25 we will assume an increase to our operating budget of roughly $1.5 million as we straddle multiple year contracts related to operating two ERP systems. We believe there will be opportunities to reduce this impact through a competitive bid process. In FY26 we anticipate that the ERP transition is complete from a contract and service engagement perspective. The overall net increase for a modern ERP system is roughly $800k annually. The contract for the new ERP systems will likely be for 10 or more years.

	Stage I	Stage II		COMMITTEMENTS	
	FY23	FY24	FY25	UNC	STATE
Data Hub	$ 250,000.00			Ongoing	One Time
Data Hub Implementation	$ 100,000.00				One Time
ID Management	$ 200,000.00			Ongoing	One Time
ID Management Implementation	$ 25,000.00				One Time
ERP Analysis	$ 100,000.00				One Time
Training (IT Specific)	$ 20,000.00	$ 20,000.00			One Time
Managed Cloud	$ 556,000.00			Ongoing	One Time
Cloud Onboard Services	$ 150,000.00				One Time
SaaS ERP HR/Fin Conversion		$ 1,680,000.00			One Time
Hosting Maint and Support		$ 779,729.00		Ongoing	One Time
Staffing Backfill		$ 415,000.00			One Time
Project Total	$ 1,401,000.00	$ 2,894,729.00			
Project and Product Contigency	$ 70,050.00	$ 144,736.00			
UNC Contibution (Full Points)	$ (60,313.00)	$ (124,618.00)			
State Request by Phase	$ 1,410,737.00	$ 2,914,847.00		TOTAL	4,325,584

H. PROJECT SCHEDULE:

This project will be broken into two stages. Stage one is the preparation for moving to the cloud. It will include the implementation of a Data Hub and ID management system. Stage one will close with the migration of the current ERP system to a cloud provider. Stage two will include a formal request for proposal (RFP) to select the most appropriate ERP SaaS vendor for our Finance and HR modules.

Implementation Plan

The University of Northern Colorado employs several IT specific project managers and a Project Management Office. A project manager will be assigned, and the original scope will be reviewed. Stakeholders and technical staff will attend a kickoff meeting where project policies and procedures will be reviewed. One of the main procedures reviewed will be the change management policy that includes communication plans to students, faculty and staff. UNC has a well-defined maintenance window (Thurs, Sat and Sun 5am-7am) that will be used to install equipment. This project will require a phase in implementation. The project will take 24-30 months to complete. We will work with and communicate with our IT governance group that includes Academic, Student and Administrative units.

Phase _1_of_2_	**Start Date**	**Completion Date**
Pre-Design	**4/1/22**	**6/1/22**
Design	**6/1/22**	**7/1/22**
Procurement	**6/1/22**	**8/1/22**
Implementation	**10/1/22**	**7/1/23**
Testing	**4/1/23**	**7/1/23**
Go Live	**7/1/23**	**8/1/23**

Phase _2_of_2_	**Start Date**	**Completion Date**
Pre-Design	**4/1/23**	**6/1/23**
Design	**5/1/23**	**7/1/23**
Procurement	**6/1/23**	**8/1/23**
Implementation	**8/1/23**	**7/1/24**
Testing	**1/1/24**	**6/1/24**
Go Live	**6/1/24**	**9/1/24**

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	❑ Yes	☑ No
Request 6-month encumbrance waiver:	❑ Yes	☑ No
Is this a continuation of a project appropriated in a prior year:	❑ Yes	☑ No
State Controller Project Number (if continuation):		

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

UNC is one of six institutions that have worked directly with potential ERP vendors to discuss a consortium license pricing discount proportionate to the volume of licenses our campuses would collectively secure. Conversations between our universities have also allowed us to identify common interest in custom ERP integrations for systems we utilize, such as Banner, Degree Works, Data Integrations, Identity Management, Colorado Higher Education Insurance Benefits Alliance (CHEIBA) Trust, College Opportunity Fund (COF) and Colorado Operations Resource Engine (CORE). By agreeing upon these foundational integrations for all of our ERPs, system development and implementation become more efficient and will generate additional savings in start-up costs for our projects. In addition to a decrease in start-up costs and ongoing licensing expenses, our collaboration also formalizes a community of practice focused on ERP implementation that will provide opportunities for joint training, support, and problem solving. These areas of identified savings will create potential savings for other Colorado colleges and universities, should they embark on similar ERP replacement initiatives.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

This project would provide a significant improvement in UNC's Disaster Recovery posture. The use of cloud vendors and SaaS strengthen the business continuity preparedness for campus. Cloud providers have redundancy and capabilities far exceeding the capabilities of an institution of our size. The cloud hosted infrastructure offers geographically-distributed and fully redundant infrastructure. Expectations from cloud providers is uptime of 99.9%. Moving to the cloud will reduce the restoration of systems to hours instead of days. Vendors can supply the technical expertise in a redundant fashion with economies of scale.

Security benefits would be substantial from the perspective that the ERP is no longer in our Data Center. This would allow our security team to focus on network and cyber security initiatives. Through strong contract language we believe that we could ensure the safety of our institutional data. We would also provide oversight and audit functions with our third-party hosting environment.

L. BUSINESS PROCESS ANALYSIS:

UNC and CMU developed the cost of the project using estimates of competing ERP vendors, technology consultant input, and information jointly shared among Colorado schools collaborating on project plans and strategies to modernize ERP systems. Savings of data center infrastructure costs that will be eliminated by moving to a cloud-based ERP were taken into consideration along with project cost savings by leveraging shared implementation and training services. However, the additional cloud service charges are expected to increase the University's annual ERP costs in order to significantly enhance the institution's business capabilities and user experience as a result of its digital transformation.

University has identified a vendor that has extensive experience working with higher education customers to perform a review assessment of business processes, gap analysis of current ERP system, ERP market and financial analyses, migration impact and consideration, and stakeholder readiness assessment.

Rural College Consortium

- Colorado Northwestern Community College, Lamar Community College, Morgan State Community College, Northeastern Junior College, Otero College, Trinidad State College –

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 11/2/2021

FY22-23 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) **Funding Type (Cash, CCF, Cash & CCF):**	CCF	(2) **Intercept Program Request? (Yes/No):**	No
(B)	(1) **Institution:**	Colorado Northwestern Community College, Lamar Community College, Morgan Community College, Northeastern Junior College, Otero Junior College, Trinidad State Junior College	(2) **Name & Title of Preparer:**	Landon K. Pirius, Vice Chancellor for Academic and Student Affairs
(C)	(1) **Project Title:**	Rural College Consortium	(2) **E-mail of Preparer:**	Landon.pirius@cccs.edu
(D)	(1) **Project Phase (__ of __):**	1 of 1	(2) **State Controller Project # (if continuation):**	
(E)	(1) **Project Type (IT):**	Capital IT	(2) **Institution Signature Approval:**	Landon K. Pirius May 19, 2021
(F)	(1) **Year First Requested:**	FY 2022-2023	(2) **CDHE Signature Approval:**	Date
(G)	(1) **Priority Number (Leave blank for continuation projects):**	_____ of _____	(2) **OSPB Signature Approval**	Date

(1)		(a) **Total Project Costs**	(b) **Total Prior Year Appropriation(s)**	(c) **Current Budget Year Request**	(d) **Year Two Request**	(e) **Year Three Request**	(f) **Year Four Request**	(g) **Year Five Request**
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	**0.00%**	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	**$ -**	**$ -**	$ -	**$ -**	**$ -**	**$ -**	**$ -**
	Equipment							
(28)	Servers	$ 2,500,000	$ -	**$ 2,500,000**	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ 2,420,000	$ -	**$ 2,420,000**	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ 610,000	$ -	**$ 610,000**	$ -	$ -	$ -	$ -
(32)	Other (Classroom Technology - monitors, microphones, cameras, etc)	$ 2,667,975	$ -	**$ 2,667,975**	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ 8,197,975	$ -	**$ 8,197,975**	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	**$ 8,197,975**	**$ -**	**$ 8,197,975**	**$ -**	**$ -**	**$ -**	**$ -**
	Project Contingency							
(36)	5% for New	$ 429,025	$ -	**$ 429,025**	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 429,025	$ -	**$ 429,025**	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	**$ 8,627,000**	**$ -**	**$ 8,627,000**	**$ -**	**$ -**	**$ -**	**$ -**
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	**$ -**	$ -	$ -	$ -	$ -
	TOTAL	**8,627,000**	**-**	**8,627,000**	**-**	**-**	**-**	**-**

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2022-23 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	$8,627,000	
Cash Fund Amount (CF):	$0	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Colorado Northwestern Community College, Lamar Community College, Morgan Community College, Northeastern Junior College, Otero Junior College, Trinidad State Junior College	
Project Title:	Rural College Consortium	
Project Phase (Phase _of_):	1 of 1	
State Controller Project Number (if continuation):		
Project Type:	X	Technology Hardware
		Technology Software
Year First Requested:	FY 2022 - 2023	
Priority Number (Leave blank for continuation projects):	___ OF ___	
Name & Title of Preparer:	Landon K. Pirius, Vice Chancellor for Academic and Student Affairs	
E-mail of Preparer:	Landon.pirius@cccs.edu	
Institution Signature Approval:	5/19/2021 Date	
OSPB Signature Approval:	Date	
CDHE Signature Approval:	Date	

A. PROJECT SUMMARY/STATUS:

The Colorado Community College System aims to modernize the technology infrastructure at its 6 rural community colleges and subsequently, link those colleges through technology in order to share instruction and student support services. Once the technology is modernized and the rural colleges are linked, students in all rural areas of the state will be able to have equitable access to academic programs, statewide transfer agreements, workforce development training, and student support services. The current reality is that rural students and communities have inequitable access to higher education depending on their geographic location and proximity to a physical college campus. Furthermore, once established, colleges in the Rural College Consortium will be able to improve instructional cost efficiency by pooling rural students across multiple communities into fewer course sections. In addition, students will gain expanded access to critical support services like mental health counseling, academic advising, financial advising, tutoring, and more.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$8,627,000	$0	**$8,627,000**	$0	$0	$0	$0
Cash Funds (CF)	$0	$0	**$0**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$8,627,000**	**$0**	**$8,627,000**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

Colorado's rural community colleges play a vital role in their respective service areas. These colleges provide access to higher education, enhance workforce development, and spur innovation in communities all across Colorado. Consequently, it is important for rural community colleges to survive and thrive long into the future.

To ensure long-term sustainability and financial viability, the Colorado Community College System is forming a Rural College Consortium (RCC). The RCC would create a network across Colorado ensuring equitable access to higher education, statewide transfer agreements, workforce development training opportunities, and strong student support services. The RCC would allow a single rural community college to offer a particular college course, full degrees and certificates, or student support services to students at the other five rural community colleges and their respective service areas. The RCC would reduce duplication of low-enrolled courses, aggregate students across multiple colleges into courses that otherwise could not be offered, ensure access to degree and certificates, expand access to workforce development training, and provide support services otherwise limited to geographic location.

The future RCC would meet Colorado's Master Plan by expanding access to credentials, expanding transfer opportunities, improving student success, and addressing inequities between rural and urban communities. In addition, the improved instructional cost efficiency and shared services will save rural colleges money while expanding access regardless of geographic location. However, in order to realize these benefits, rural community colleges need an investment of state dollars to modernize college technology infrastructure.

When rural community colleges were created decades ago, there was a large infusion of state resources to support their construction. Over time the state has provided one time dollars for various construction and technology projects. That investment is critical because the rural community colleges do not have large student enrollment and as a result, cannot generate the resources on their own for most facilities and technology upgrades. In the case of technology, rural community colleges are operating on 15-20 year old networks, servers, and classroom technology. They simply do not have the resources to upgrade their technology infrastructure to today's standards, which creates

further inequities between rural and urban higher education institutions. Below is a summary of the current state at rural community colleges in Colorado:

I. Network Infrastructure

The lack of a quality network infrastructure is significant. A high speed, stable network infrastructure is critical to the operation of the college, both administratively and academically. The colleges have aging network hardware that is often no longer being maintained by the college and/or no longer supported by the vendor. This results in slow access speeds for systems such as Banner, Desire2Learn (D2L), and internet access in general, and results in user frustration overall with technology. In addition to aging hardware, often the fiber or copper wiring in the buildings and between campus buildings is insufficient or the wrong mode for today's bandwidth requirements. High speed bandwidth is available to each rural college, but colleges cannot use the bandwidth due to old wiring and/or switches. To address this, rural colleges require new cabling and replacement hardware, which is a significant expense.

II. Server Infrastructure

Server infrastructure is equally outdated at the rural community colleges and not appropriately maintained with updates leaving servers vulnerable to cyber-attacks and other issues. However, rather than replace server hardware or train staff on technically complex tasks that are not used on a frequent basis, it was agreed that System Office Information Technology (CCCS-IT) would transfer college servers to centralized data centers in a virtualized environment and provide server management, patching, and backups. Because CCCS-IT does this work all the time for their enterprise systems, it is not a huge effort to do this for the rural colleges and easy to manage in a virtualized environment. This consolidation allows these rural colleges to focus their IT staff on supporting the student facing technology at the campuses. The cost savings to these colleges is substantial and will save them a combined $830K over the next 5 years by not having to replace and maintain local servers and backup systems. The three rural colleges with more current hardware will be migrated to CCCS-IT's infrastructure as their hardware reaches end-of-life or if other conditions warrant doing it sooner.

III. Insecure and Improper Computer Room Facilities

Physical security to network equipment and local data center resources where private data is currently stored is a significant concern. The majority of these locations at the colleges still were using physical keys with a many staff having access to shared rooms where IT equipment was installed. To secure these facilities properly, these locations would be secured using multifactor access, for example the scanning of a key card and a pin number. There would be video surveillance cameras installed to monitor the physical access for unauthorized entry. For rooms that must be shared, they would have equipment cabinets installed that are locked in order to prevent unauthorized access.

Other facility related issues for computer rooms include external doors that let in dirt or inclement weather into rooms with computer equipment, water pipes running through computer room facilities, and neglected or insufficient cooling and backup power. These issues would be addressed with these dollars.

IV. Classroom Technology

In order to connect college classrooms together through the RCC, rural colleges need an investment of resources to procure monitors, cameras, microphones, and other teaching tools. Most rural college classrooms currently lack the technology necessary to connect two same-college classrooms let alone a classroom on the other side of the state. Some rural colleges have made investments in this space, while others have not. This project would ensure all colleges have the classroom equipment necessary to connect to the RCC.

V. Standardization of Technology

The rural colleges would be well served to standardize on office and classroom technology including laptops, printers, video units, phones, as well as network technology such as switches and routers. Often limited staff time is wasted having staff work on outdated equipment which is time consuming and often not successful. Specifically, for office and classroom technology, it would allow staff to help one another across the Rural College Consortium with their technology and/or training, even without adding staff. This would also facilitate plans by the Rural College Consortium to teach classes via web and video from one rural college to the other rural colleges. Using the same network technology as the system office and the other colleges also allows CCCS-IT to assist in the event of a serious problem.

Once this one-time investment in technology infrastructure is made, CCCS-IT will maintain virtual servers and software upgrades. That maintenance will be funded through CCCS-IT existing resources. In addition, each college will have their own plan to maintain and replace network infrastructure and classroom technology. These plans will prevent the need for rural community colleges to request state dollars for similar technology infrastructure in the future.

As a system, many applications and infrastructure investments are funded system-wide. Among them are Disaster Recovery/Business Continuity (DR/BC) and Cyber-Security. System IT has established a robust second data center and have failover processes in place for all enterprise systems such as the Student Information System (SIS) and other administrative systems that are in Banner, Exchange (email), Wide Area Network (WAN) and Voice Over Internet Protocol (VoIP). System-wide cyber security is in place to monitor all network access points. System-wide training on cyber security is required of all employees on an annual basis. System IT and the colleges are in the process of implementing Multi-Factor Authentication (MFA) and that implementation should be substantially complete for enterprise systems including email by the Fall 2021 semester start. All system colleges benefit from this enterprise approach that ensures data protection and integrity are system-wide including student data.

D. PROGRAM INFORMATION:

All degree and certificate programs and many student support services at each rural community college would be impacted by the RCC. Not all rural colleges can offer the breadth of academic programs that a single urban college can, and some rural colleges cannot offer the wide-range of statewide transfer agreements. As a result, students in rural communities cannot access all academic programs, state wide transfer agreements, or student support services without leaving their

communities or opting for online education. The RCC would provide equitable access to students and rural communities regardless of local resources or geographic location.

E. CONSEQUENCES IF NOT FUNDED:

If this project is not funded, there are two significant consequences. First, the technology infrastructure at rural community colleges cannot be sustained much longer. Two colleges have already experienced catastrophic failures and it is likely a matter of time before other colleges experience something similar. Furthermore, weaknesses in internal networks and out of date hardware make the rural colleges more vulnerable to cyber-attack. The better the internal network switches are and that they are current and up-to-date on patches improves the overall security posture of the entire system. Today's hardware can be managed and patched at the system level. There are not sufficient resources at any of the rural community colleges to address the technology infrastructure on their own.

Second, rural community colleges, rural communities, and rural students will continue lacking access to all academic programs, statewide transfer agreements, and student support services. The gap between what rural students can access and what urban students can access will continue to widen. Furthermore, rural community colleges may not be able to sustain current program offerings and support services, which means these colleges and communities may have less access in the future.

F. ASSUMPTIONS FOR CALCULATIONS:

Costs were provided based on vendor estimates. When purchasing we find Higher Education prices are lower than vendor price estimates, so did not include any inflation. However, we did include 10% contingency for cost increases or issues identified during the design or construction phases.

G. OPERATING BUDGET IMPACT:

The colleges have the support infrastructure in place to service the equipment upgrades associated with this project. Manufacturer warranties and support coupled with the expertise of the college and system staff along with maintenance agreements already in place will mitigate impact on the operating budgets of the colleges. We anticipate the support structure currently available will be sufficient to maintain the equipment and software associated with this project with minimal additional cost to the colleges.

H. PROJECT SCHEDULE:

Phase 1 of 1	Start Date	Completion Date
Pre-Design	**Complete**	
Design	**July 1, 2022**	**August 31, 2022**
Construction	**September 1, 2022**	**May 31, 2023**
FF&E /Other		
Occupancy	**June 1, 2022**	**June 30, 2023**

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	❑ Yes	☒ No
Request 6-month encumbrance waiver:	❑ Yes	☒ No

Is this a continuation of a project appropriated in a prior year:	❑ Yes	☒ No
State Controller Project Number (if continuation):		

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

There will most likely be no cost savings associated with this project. After the initial cost to purchase equipment, software, and installation, there will be minimal new and ongoing costs such as maintenance agreements, software updates, possible license renewals, and general repair and maintenance due to wear and tear under normal use. These costs will be absorbed within the colleges' existing operating budgets.

This project will reduce duplication of low-enrolled courses, aggregate students across multiple colleges into courses that otherwise could not be offered, ensure access to degree and certificates, expand access to workforce development training, and provide support services otherwise limited to geographic location. Completion of this project will also enable instructional staff to teach with the most current information and processes available. In turn, the improvements will provide our students with opportunities for learning that are unprecedented. For student success and, in turn success of the colleges, it is vital technology be made available to allow instructors to teach and students to learn and become prepared to take advantage of opportunities that are present now and become available in the future.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

The solution fits into our existing Disaster Recovery/Business Continuity plan, infrastructure, and approach to system-wide standardization where applicable. Because most of the data is already in Ellucian Banner for the Student Information System or Desire2Learn Brightspace for the Learning Management System data protection is already in place. Removing outdated network hardware and unpatched servers improves our system-wide security posture as well as the security at the local college level.

L. BUSINESS PROCESS ANALYSIS:

Since we have built out similar infrastructure for the Lowry campus and worked with several of our college IT Directors on similar projects we are confident of the needs and the requirements as well as the cost and the time required for implementation. One concern is the lead time for the ordering of network hardware. This year, due to COVID, significant lead time has been required. Although we anticipate that improving, we have taken manufacturing shortages into account in our timeframe. There are alternative hardware choices available, but our preference is to remain standardized on our current hardware vendors especially for remote support requirements and staff knowledge and skills. Another potential time constraint would be the bidding out of the cabling installation. In the rural areas, we have factored in additional costs should we need to use a vendor from outside the local area. This is highly probable and higher cost and, travel expenses were included in the estimates along with additional bid time due to a lack of local contractors.

Improving Student Access to Technology

- Community College of Aurora -

FY22-23 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) Funding Type (Cash, CCF, Cash & CCF):	CCF and Cash	(2) Intercept Program Request? (Yes/No):	No
(B)	(1) Institution:	Community College of Aurora	(2) Name & Title of Preparer:	John Bottelberghe
(C)	(1) Project Title:	Improving Student Access to Technology	(2) E-mail of Preparer:	john.bottelberghe@ccaurora.edu
(D)	(1) Project Phase (__ of __):	1 of 1	(2) State Controller Project # (if continuation):	
(E)	(1) Project Type (IT):	Capital IT	(2) Institution Signature Approval:	5-26-21 Date
(F)	(1) Year First Requested:	FY 2019-2020	(2) CDHE Signature Approval:	Date
(G)	(1) Priority Number (Leave blank for continuation projects):	____ of ____	(2) OSPB Signature Approval	Date

(1)		(a) Total Project Costs	(b) Total Prior Year Appropriation(s)	(c) Current Budget Year Request	(d) Year Two Request	(e) Year Three Request	(f) Year Four Request	(g) Year Five Request
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ 1,850	$ -	$ 1,850	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ 31,020	$ -	$ 31,020	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ 1,972	$ -	$ 1,972	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	6.00%	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ 34,842	$ -	$ 34,842	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(24)	Software Built	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Equipment							
(28)	Servers	$ 278,267	$ -	$ 278,267	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ 191,572	$ -	$ 191,572	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ 469,839	$ -	$ 469,839	$ -	$ -	$ -	$ -
	Total Project Costs							$ -
(35)	***Total Project Costs***	$ 504,681	$ -	$ 504,681	$ -	$ -	$ -	$ -
	Project Contingency							
(36)	5% for New	$ 25,234	$ -	$ 25,234	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 25,234	$ -	$ 25,234	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	$ 529,915	$ -	$ 529,915	$ -	$ -	$ -	$ -
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 476,923	$ -	$ 476,923	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ 52,992	$ -	$ 52,992	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	529,915	-	529,915	-	-	-	-

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2022-23 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$476,923**	
Cash Fund Amount (CF):	**$52,992**	
Intercept Program Request? (Yes/No):	No	
Institution Name:	Community College of Aurora	
Project Title:	Improving Student Access to Technology	
Project Phase (Phase _of_):	1 of 1	
State Controller Project Number (if continuation):		
Project Type:	X	Technology Hardware
		Technology Software
Year First Requested:	FY 2019 – 2020	
Priority Number (Leave blank for continuation projects):	___ OF ___	
Name & Title of Preparer:	John Bottelberghe, Director of Facilities	
E-mail of Preparer:	John.Bottelberghe@ccaurora.edu	
Institution Signature Approval:	5-26-21 Date	
OSPB Signature Approval:	Date	
CDHE Signature Approval:	Date	

A. PROJECT SUMMARY/STATUS:

This project is designed to improve the student experience interacting with technology at CCA. We will address things such as wireless access, classroom computing, and outside access to needed computing resources for students. This project does not have any prior appropriated phases.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$476,923	$0	**$476,923**	$0	$0	$0	$0
Cash Funds (CF)	$52,992	$0	**$52,992**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$529,915**	**$0**	**$529,915**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

This project will provide the ability for the CCA IT department to provide better access to the software and internet students need to perform classwork. There are two parts to this project. CCA has made a switch to thin clients to provide desktops to our students in most of our computer labs on campus. The hardware that this environment runs on is starting to age and can no longer be upgraded to the latest versions of software. The first step of this project will be to upgrade the hardware these servers run on to a more recent system. This will not only keep our classroom labs running quickly and efficiently, but also allow students in online or hybrid classes access to the software they need for class while they are off campus. We will also expand our ability to provide graphics intense applications with this upgrade, which will improve our ability to deliver software upgrades in the future and open new avenues for our ability to further increase our thin client environment. Included in this project is adding to and upgrading our wireless infrastructure to support the latest in wireless protocols. We intend also as part of this project to implement more robust traffic shaping to our student wireless bandwidth to improve availability and overall satisfaction with our student wireless network. This project also supports the Higher Education Master Plan goals of increasing credential completion and improving student success.

D. PROGRAM INFORMATION:

All Student Programs

E. CONSEQUENCES IF NOT FUNDED:

CCA will have to divert our student technology fee money of $200,000 – $250,000 per year for several years. These funds are currently earmarked for much needed classroom technology upgrades and improvements. Since the vast majority of our instructors on campus are part time instructors who rely on our ability to provide them the technology they need to teach in the classroom, redirecting these funds will seriously impede our ability to provide that technology to our classrooms for day to day instruction to operate in an efficient manner.

F. ASSUMPTIONS FOR CALCULATIONS:

We consulted with our vendors to properly size the requested hardware to allow for future growth and expansion in our environment. Once we completed the pre-design, we requested competitive quotes for all of the hardware we have specified for the environment, which all fell under the current HP state pricing agreement.

G. OPERATING BUDGET IMPACT:

This project will not have a significant impact to our operating budget. Historically as an institution CCA has not asked for funding from the state for our information technology projects so we are and have been including information technology in our budgeting process since our inception. This has caused CCA to fall behind our peers as funding has fluctuated over the years. This project upgrades equipment CCA already maintains support/maintenance agreements on which will be replaced with this new equipment. The opportunity to secure state funding for this project will allow CCA to catch up to our peers from an information technology perspective much faster and help us continue to provide outstanding information technology experiences for all of our constituents.

H. PROJECT SCHEDULE:

Phase _1_of_1_	Start Date	Completion Date
Pre-Design	February 2023	March 2023
Design	April 2023	June 2023
Construction	As soon as funded	4 months from funding date
FF&E /Other		
Occupancy	5 months from funding date	5 months from funding date

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	❑ Yes	☒ No
Request 6-month encumbrance waiver:	❑ Yes	☒ No
Is this a continuation of a project appropriated in a prior year:	❑ Yes	☒ No
State Controller Project Number (if continuation):		

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

CCA does not anticipate any cost savings with this project.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

This project does not impact our security, backup, or disaster recovery environments.

L. BUSINESS PROCESS ANALYSIS:

This project was not designed to fix any operational issues within IT.

Communications System Upgrade

- Colorado State University – Pueblo

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

Print Date: 6/8/2021

FY22-23 CAPITAL INFORMATION TECHNOLOGY PROJECT REQUEST- *COST SUMMARY (CC_IT-C)**

(A)	(1) Funding Type (Cash, CCF, Cash & CCF):	State Funded	(2) Intercept Program Request? (Yes/No):	No
(B)	(1) Institution:	Colorado State University - Pueblo	(2) Name & Title of Preparer:	Craig Cason - AVP for Facilities Management
(C)	(1) Project Title:	Communications System Upgra	(2) E-mail of Preparer:	craig.cason@csupueblo.edu
(D)	(1) Project Phase (__ of __):	1 of 1	(2) State Controller Project # (if continuation):	N/A
(E)	(1) Project Type (IT):	Capital IT	(2) Institution Signature Approval:	6-08-21 Date
(F)	(1) Year First Requested:	FY 2020-21	(2) CDHE Signature Approval:	Date
(G)	(1) Priority Number (Leave blank for continuation projects):	1 Of 1	(2) OSPB Signature Approval	Date

(1)		(a) Total Project Costs	(b) Total Prior Year Appropriation(s)	(c) Current Budget Year Request	(d) Year Two Request	(e) Year Three Request	(f) Year Four Request	(g) Year Five Request
	Land /Building Acquisition							
(2)	Land Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(3)	Building Acquisition/Disposition	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(4)	***Total Acquisition/Disposition Costs***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Professional Services							
(5)	Consultants/Contactors	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(6)	Quality Assurance	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(7)	Training	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(8)	Leased Space (Temporary)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(9)	Feasibility Study	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(10)	Other Services/Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(11)	Inflation Cost for Professional Services	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(12)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(13)	***Total Professional Services***	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Associated Building Construction							
(14)	Cost for New (GSF):	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(15)	New $_____/GSF							
(16)	Cost for Renovate GSF:	$ 118,000	$ -	$ 118,000	$ -	$ -	$ -	$ -
(17)	Renovate $_____/GSF							
(18)	Site Work/Landscaping	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(19)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(20)	Inflation for Construction	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(21)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(22)	***Total Construction Costs***	$ 118,000	$ -	$ 118,000	$ -	$ -	$ -	$ -
	Software Acquisition							
(23)	Software COTS	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(24)	Software Built	$ 1,350,000	$ -	$ 1,350,000	$ -	$ -	$ -	$ -
(25)	Inflation on Software	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(26)	Inflation Percentage Applied		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
(27)	***Total Software***	$ 1,350,000	$ -	$ 1,350,000	$ -	$ -	$ -	$ -
	Equipment							
(28)	Servers	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(29)	PCs, Laptops, Terminals, PDAs	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(30)	Printers, Scanners, Peripherals	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(31)	Network Equipment/Cabling	$ 1,036,202	$ -	$ 1,036,202	$ -	$ -	$ -	$ -
(32)	Other (Specify)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(33)	Miscellaneous	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(34)	***Total Equipment and Miscellaneous Costs***	$ 1,036,202	$ -	$ 1,036,202	$ -	$ -	$ -	$ -
	Total Project Costs							
(35)	***Total Project Costs***	$ 2,504,202	$ -	$ 2,504,202	$ -	$ -	$ -	$ -
	Project Contingency							
(36)	5% for New	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(37)	10% for Renovation	$ 250,420	$ -	$ 250,420	$ -	$ -	$ -	$ -
(38)	***Total Contingency***	$ 250,420	$ -	$ 250,420	$ -	$ -	$ -	$ -
	Total Budget Request							
(39)	***Total Budget Request***	$ 2,754,622	$ -	$ 2,754,622	$ -	$ -	$ -	$ -
	Funding Source							
(40)	Capital Construction Fund (CCF)	$ 2,754,622	$ -	$ 2,754,622	$ -	$ -	$ -	$ -
(41)	Cash Funds (CF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(42)	Reappropriated Funds (RF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
(43)	Federal Funds (FF)	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	TOTAL	2,754,622	-	2,754,622	-	-	-	-

*Sould match CC_IT-N Form

COLORADO
Department of Higher Education

STATE OF COLORADO
DEPARTMENT OF HIGHER EDUCATION

FY 2022-23 CAPITAL IT PROJECT REQUEST- *NARRATIVE (CC_IT-N)*		
Capital Construction Fund Amount (CCF):	**$2,754,622**	
Cash Fund Amount (CF):		
Intercept Program Request? (Yes/No):	No	
Institution Name:	Colorado State University-Pueblo	
Project Title:	Communications System Upgrade	
Project Phase (Phase _of_):	Phase 1 of 1	
State Controller Project Number (if continuation):	N/A	
Project Type:	X	Technology Hardware
	X	Technology Software
Year First Requested:	FY 2020-21	
Priority Number (Leave blank for continuation projects):	1 Of 1	
Name & Title of Preparer:	Craig Cason, Associate Vice President for Facilities Management	
E-mail of Preparer:	craig.cason@csupueblo.edu	
Institution Signature Approval:	G L 6-08-21	
OSPB Signature Approval:	Date	
CDHE Signature Approval:	Date	

A. PROJECT SUMMARY/STATUS:

The purpose of this Capital Budget Request is to fund the replacement of the campus telephone system at Colorado State University-Pueblo (CSU-Pueblo) with a Voice-Over Internet Protocol (VOIP) unified communications telephone system. The total funding request is **$2,754,622**. The current traditional PBX system is antiquated and at end of life.

B. SUMMARY OF PROJECT FUNDING REQUEST:

Funding Source	Total Project Cost	Total Prior Appropriation	Current Budget Year Request	Year Two Request	Year Three Request	Year Four Request	Year Five Request
Capital Construction Funds (CCF)	$2,754,622	$0	**$2,754,622**	$0	$0	$0	$0
Cash Funds (CF)	$0	$0	**$0**	$0	$0	$0	$0
Reappropriated Funds (RF)	$0	$0	**$0**	$0	$0	$0	$0
Federal Funds (FF)	$0	$0	**$0**	$0	$0	$0	$0
Total Funds (TF)	**$0**	$0	**$0**	**$0**	**$0**	**$0**	**$0**

C. PROJECT DESCRIPTION/SCOPE OF WORK/JUSTIFICATION:

In order to obtain and support a new VOIP unified communications telephone system, CSU-Pueblo is requesting funding for the following campus upgrades:

New VOIP Telephone System
The request includes the procurement of a 1,000-license VOIP unified communications telephone system. A VOIP unified communications system utilizes data network infrastructure and allows seamless integration of telephone calling, voicemail, email, video conferencing, integration with mobile devices, and other features. Included are hardware, 1,000-license software, voicemail, and E-911 integration. Two instances of the system are included for purposes of redundancy.

New VOIP Campus Emergency (Blue) Telephones
The request includes the provision and installation of 20 campus emergency telephones (15 replacement and 5 new additional).

Additional Network Power Over Ethernet (POE) Edge Switches
The request includes the provision and installation of 34 additional edge switches and infrastructure to be deployed in IT data closets across campus.

Upgrades to current Information Technology (IT) Closet
The current Information Technology (IT) Closets will need to be renovated to accommodate the new POE network switches. This includes updating the current configuration of the closets and adding HVAC, as necessary.

D. PROGRAM INFORMATION:

The project implementation follows best practices as set forth by IEEE standards, and network and VOIP equipment. All areas of campus that utilize telephone calling, voicemail, email, video conferencing (among other applications) will be impacted by the implementation of this request. Instruction, IT, and Campus Safety will also be impacted. Beneficiaries of the VOIP upgrade and installation of new and additional emergency phones are students, employees, and visitors to CSU-Pueblo.

Implementation Plan:

New VOIP Telephone System
The implementation plan is to request a documented quote for the VOIP telephone system. The quote will include equipment, software, and features based on the specifications provided to the vendor by the CSU-Pueblo Telecommunications Services department.

The timeline for implementation of the new VOIP telephone system is three months; however, additional portions of the Capital Budget Request must be completed concurrently for the VOIP system to be installed. These parts of the request are:

Installation of Additional Network Power Over Ethernet (POE) Edge Switches and infrastructure
This portion of the Capital Budget Request will take six months to complete.

New VOIP Campus Emergency (Blue) Telephones
This portion of the Capital Budget Request will take three months to complete.

Upgrades to current Information Technology (IT) Closet
This portion of the Capital Budget Request will take 6 months to complete.

E. CONSEQUENCES IF NOT FUNDED:

Not funding the VOIP telephone system will prevent the University from taking advantage of 21st century technology and will simply mean that CSU-Pueblo will continue to use its existing traditional PBX telephone system, which is adequate for little more than basic communication between persons on the telephone. It has some enhanced features such as voicemail, conferencing, and E-911 services, but does not provide the advanced unified communications services of a VOIP telephone system.

Not funding the VOIP technology upgrade and added emergency blue phones will simply force CSU-Pueblo to maintain the campus safety status quo. The VOIP technology upgrade and addition of emergency blue phones will provide increased peace of mind for those traveling throughout campus due to enhanced direct dial connectivity with the Pueblo County Sheriff's Office. Emergency phones are an important part of CSU-Pueblo's safety strategy and a visible deterrent to those who might otherwise engage in criminal behavior. The upgraded technology and added emergency phones will also satisfy a requirement of the Clery Act to document CSU-Pueblo's efforts to improve campus safety.

F. ASSUMPTIONS FOR CALCULATIONS:

Zultys VOIP telephone system, 1,000 license	$	1,350,000
Extreme POE network switches and infrastructure, 34 ea.	$	236,608
Emergency "blue" VOIP phones, directional boring cabling	$	737,994
Upgrades to current Information Technology Closets	$	118,000
UPS power backup for switches	$	61,600
Contingency (10%)	$	250,420
Sub Total Cost	**$**	**2,754,622**

G. OPERATING BUDGET IMPACT:

No operating budget increases are anticipated.

H. PROJECT SCHEDULE:

Phase __of__	Start Date	Completion Date
Pre-Design	7/1/2022	9/1/2022
Design	7/1/2022	9/1/2022
Construction	9/1/2022	4/1/2023
FF&E /Other	9/1/2022	6/30/2023
Occupancy		

I. ADDITIONAL INFORMATION:

Three-year roll forward spending authority is required:	☐ Yes	☒ No
Request 6-month encumbrance waiver:	☐ Yes	☒ No
Is this a continuation of a project appropriated in a prior year:	☐ Yes	☒ No
State Controller Project Number (if continuation):		

J. COST SAVINGS / IMPROVED PERFORMANCE OUTCOMES:

Implementation of this project will result in the realization of cost savings with regard to purchased services in the form of telecommunications lines, circuits, and services. Additionally, the new technologies employed by the VOIP telephone system will result in greater efficiencies and ease of operation with regard to how the unified communication technologies inherent in the new VOIP telephone system are utilized by the end user.

K. SECURITY AND BACKUP / DISASTER RECOVERY:

The VOIP telephone system will utilize the Security and Backup services already inherent in the campus network. Two instances of the VOIP telephone system will be installed and housed in separate locations to aid in disaster recovery.

L. BUSINESS PROCESS ANALYSIS:

As it is at end of life, the existing traditional PBX system is the single point of failure for telephony at CSU-Pueblo and, as such, should be replaced as soon as practicable. As the most current technology for telephony is the VOIP telephone system, it has been determined this technology is the most appropriate replacement for the existing system

Appendix D: CCHE Capital IT Scoring Criteria

#1 IT Health, Security and Industry Standards

ALL INSTITUTIONS	
IT Health, Security and Industry Standards	**Points**
IT systems associated with proposed project are fully supported by developer[1]	**/2**
Cybersecurity of IT systems/devices associated with project is up to industry standards (e.g. two-factor authentication, does not compromise FERPA compliance, etc.)	**/2**
Articulates how project fits in with current disaster recovery system	**/2**
Project mitigates urgent/serious IT risk (e.g. imminent risk of system failure or serious security IT risk (e.g. imminent risk of system failure or serious security vulnerability)	**/2**
Project has life safety function[2]	**/2**
TOTAL	**/10**

Clarifications:

[1] "Fully supported" means that the developer of the software actively provides updates, addresses security concerns, and provides full IT support for the version of the software utilized. For hardware, full support and replacement parts must be available from manufacturer.

[2] Examples of a life safety function would be security cameras, emergency alert systems, etc.

#2 Other Fund Sources[1,3,4,5]

GROUP 1: ASU, CSU-P, FLC, UNC, WCU	
Cash Contribution of Total Funds Requested	**Points**
1-2%	**2**
2-3%	**4**
3-4%	**6**
Over 4%	**8**
GROUP 2: CCCS Urban/Suburban Campuses[2]	
1-3%	**2**
3-6%	**4**
6-8%	**6**
Over 8%	**8**
GROUP 3: CMU, MSU	
1-4%	**2**
4-7%	**4**
8-10%	**6**
Over 10%	**8**
GROUP 4: CSM, CSU-FC, CU	
1-8%	**2**
8-16%	**4**
17-25%	**6**
Over 25%	**8**
Other Fund Sources Total	**/8**

[1]AHEC, CCCS-Lowry, and CCCS Rural Campuses (CNCC, LCC, MCC, NJC, OJC, PCC, and TSJC) are exempt.

[2]CCCS Urban/Suburban Campuses are ACC, CCA, CCD, FRCC, PPCC, and RRCC.

[3]Pledged cash contributions may not be changed after initial submission for scoring purposes, unless there is documented proof of a late gift or award that was not final at the time of initial submittal, but became available prior to the final CCHE Fiscal Affairs and Audit Committee (FAA) prioritization vote. Supporting materials must be submitted to the CDHE and FAA at least one day prior to the August FAA meeting. If non-gift additional funds become available, an increase in cash spending authority may be requested without scoring impact.

#3 Quality of Planning/Proposal

ALL INSTITUTIONS	
Quality of Planning/Proposal	**Points**
Cost-benefit analysis performed with positive outcome	**/2**
Proposal articulates how the project fits in the with institution's strategic IT plan	**/2**
Alternatives analyzed	**/2**
Proper measures in place to prevent time and cost overruns	**/2**
Proposed project is cohesive and is not a combination of smaller, unrelated projects	**/2**
TOTAL	**/10**

#4 Achieves Master Plan Goals

ALL INSTITUTIONS	
Achieves Goals	**Points**
Articulates request's alignment with one or more of the strategic goals in the Colorado Higher Education Master Plan, *Colorado Rises.*[1]	**5**
TOTAL	**/5**

[1] http://masterplan.highered.colorado.gov/read-colorado-rises/

#5 Governing Board Priority[1]

INDIVIDUAL INSTITUTIONS NOT IN A SYSTEM & AHEC	
Cash Contribution of Total Funds Requested	**Points**
37 points to distribute across all projects, with a maximum of 20 points per project.	**0-20**
COLORADO STATE UNIVERSITY SYSTEM	
52 points to distribute across all projects, with a maximum of 20 points per project.	**0-20**
UNIVERSITY OF COLORADO SYSTEM	
64 points to distribute across all projects, with a maximum of 20 points per project.	**0-20**
COLORADO COMMUNITY COLLEGE SYSTEM	
96 points to distribute across all projects, with a maximum of 20 points per project.	**0-20**
Other Fund Sources Total	**/20**

Bonus Points:

Project involves multiple institutions, all of which award the project a full 20 points.[2]	**+2**
TOTAL	**/0**

[1]Governing board priority order may not be changed after initial submission, except for when a project is withdrawn from consideration. If a governing board withdraws a project from consideration, any projects prioritized below the withdrawn project will move up one rank in priority level and be rescored accordingly. In order to have projects rescored, the CDHE and CCHE Fiscal Affairs and Audit Committee (FAA) must be informed of the withdrawal at least one day prior to the August FAA meeting.

[2]Multiple institution bonus points apply only to collaboration across separate, distinct institutions. This includes multiple community colleges within CCCS and AHEC.